VSB —TECHNICAL UNIVERSITY OF OSTRAVA
FACULTY OF ECONOMICS

DEPARTMENT OF FINANCE

Zhodnocení rentability a likvidity společnosti TSINGTAO Brewery Company Limited

Evaluation of the Profitability and Liquidity of the TSINGTAO Brewery Company Limited

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Description:

1. Introduction
2. Description of the Profitability and Liquidity Evaluation Methodology
3. Basics Financial Characteristics of the TSINGTAO Brewery Company Limited
4. Analysis of the Profitability and Liquidity of the Selected Company
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References:

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The Declaration

Herewith I declare that I elaborated the entire thesis, including all annexes, independently.

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Content

1. Introduction

After the reform and opening-up policy, the economics of China had been increasing a lot. As the oldest company in brewery industry, Tsingtao Brewery Limited experienced the great changes. The development of Tsingtao is worth studying. Financial analyze is very important for the company to know the current condition and see the exact problem of the company, which will help to predict the future tendency and make adjustment in financial policy.

The goal is to analyze the profitability and liquidity of company and quantify the influence of the sub indicators and the changes of chosen indicators of profitability and liquidity over time of Tsingtao Brewery Company limited. In this article we choose the data from 2009 to 2013 to analyze the profitability and liquidity of the company.

To distinct the structure, the bachelor thesis is mainly divided into 5 chapters. The first chapter approximately introduced the content of the article to make a first view. The second part introduced the financial analysis methodology. The methodology is used in chapter 3 for common size analyze, which helps to know the financial structure of the company. The methodology used in chapter 4 is to calculate different ratios to know the financial situation from different angle and use in pyramidal decomposition to know the different influence factor.

Chapter 3 is introducing the basic information of Tsingtao Brewery Company. There is 3 parts in this chapter. The first part introduced the history and development and the main achievements. The second part is basic data of Tsingtao brewery. It includes balance sheet, income statement and cash flow. It will also be use in the chapter 4 to calculate ratio and pyramidal decomposition. The last part of chapter 3 is common-size analyze is to introduce the financial structure. We use both vertical and horizon analyze on both 3 statements.

The main part of the bachelor thesis is chapter 4. In this part we focus on ratios that will reflect the profitability and liquidity of company and compare it with the main competitors in brewery industry. Then we choose ROE for profitability and current ratio for liquidity and do the pyramidal decomposition to see how each sector influence the ratio and the change of each ratio will increase the ratio.

The last chapter is the conclusion part. It aims to make conclusion of the analysis and make plans and prediction for the future. It helps us to see which part we can improve in the company.

2. Description of the Profitability and Liquidity Methodology

In this chapter we will introduce the methodology that will be used in the bachelor thesis. Including methodology of financial analysis, financial statements, common-size analyze, financial ratio and pyramidal decomposition. The methodology this chapter is based on Alvarez (2002)，Hitchner (2010) and Zdenek (2004).

2.1 Financial Analysis

Financial analysis based on financial statement and other information. It use specific method as a system to analyze and evaluation company's past and present operating results, financial condition and changes. The most basic function of financial analysis is to transfer a large number of report data into useful information to make specific decision and reduce uncertainty.

The fundamental goal of financial analysis is to make full use of financial statements and analyze the information from it. The goal for financial statement is various for different people. For financial manager, financial analysis is to judge the present situation of company and search the exist problem for better management. For investors and potential investors, they care more about financial standing and profitability. They will compare it with other company to see the risk and profit to make investment strategy. The creditor will pay more attention on the solvency.

Financial analysis started with financial statements. Most of the data used in analysis comes from financial statements published by the company. Therefore, financial statement is correct understanding of financial statement is very important.

2.2 Financial Statements

Financial statement is made in order to show the financial and operating conditions to owners, creditors and government. It reveals the financial position, operating results and cash flows in a certain period. It can help managers understand status of the tasks and evaluate the result of business to find the problems in time and make adjustments to the future direction. Financial

managers can help developing some measures to improve the management level and improve the efficiency.

Financial statements are results of a stage of operate. The operating ways are different, for example, expanding production scale, building new production facility, conducting outside investment and making more advertisement. These will all cause some change in data.

Financial statement includes balance sheet, income statement and cash flow. Though they are separated, they should be considered as a whole. There are links between these statements. We should be aware of their relationship to find the real condition in full range.

2.2.1 Balance sheet

Balance sheet shows the financial situation in a certain period, usually for the accounting period. It includes asset, liability and shareholders' equity. Balance sheet used accounting principles and divided the transaction subject into asset and liability & shareholders' equity and made some calculation and adjustment. It based on a situation of company in a specific time. Except for helping the company its own to search for better development, it can help the reader know the business conditions of company in the shortest time. The theory this chapter is based on Alvarez (2002)

In general, the basic structure of balance sheet puts various kinds of asset change in the left side in order. All liabilities and shareholders' equity is listed in order in the right side. Liabilities always list before shareholders' equity to show the short-term and long-term debt. The most important thing is that both side of balance sheet should be equal, which is

$$Total\ Asset = Total\ liability + Total\ shareholders'\ equity \tag{2.1}$$

Here is an example of balance sheet.

Table 2.1 An example of balance sheet

ASSETS	LIABILITIES
Current Assets	**Current Liabilities**
Cash	Notes Payable
Petty Cash	Accounts Payable
Temporary Investments	Wages Payable
Accounts Receivable	Interest Payable
Inventory	Taxes Payable

Supplies	Warranty Liability
Prepaid Insurance	Unearned Revenues
TOTAL CURRENT ASSETS	TOTAL CURRENT LIABILITIES
Investments	**Long-term Liabilities**
	Notes Payable
Property, Plant & Equipment	Bonds Payable
Land	TOTAL LONG-TERM LIAB.
Land improvements	
Buildings	TOTAL LIABILITIES
Equipment	
Depreciation	
Net Prop, Plant & Equip	
Intangible Assets	**Stockholders' Equity**
Goodwill	Common Stock
Trademarks	Retained Earnings
TOTAL INTANGIBLE ASSETS	Treasury Stock
Other Assets	TOTAL STOCKHOLDERS' EQUITY
TOTAL ASSETS	**Total liab & Stockholders' Equity**

Source: Alvarez (2002)

Asset is the economic resource owned by entrepreneur or controlled by government. It can be measured by money, including income, debt etc. Asset has different definition. The most representative one is defined by U.S Financial Accounting Standards Board Financial Accounting Concepts No. 6 in the structure of morality, as “Asset is a particular subject caused by past transactions or events of the formation. It is the mainly owned or controlled by the main body. It is the probable future economic benefits. " It is a basic element of balance sheet.

According to different standard, asset can be put into different categories. It can be divided as current assets and long-term asset according to period. Furthermore, the long-term asset can be divided into tangible asset and intangible asset according to the physical form. According to different classification criteria, the assets are mainly divided into current assets, long-term investments, fixed assets, intangible assets, deferred assets, etc.

Current asset is the asset that can be realized or used in one year or an operating accounting cycle. It generally contains cash and bank deposits, short-term investments, accounts receivable &prepayments and inventory. Long-term asset is the asset that will not be realized in one year, including equities, bonds and other investments. Fixed asset refers to the asset that can be used more than one year and will stay its physical form when using, such as buildings, machinery and equipment, transport equipment, tools and other equipment. Intangible asset is assets that don't have physical form and company can use it in a long time, including patents, patent technology, trademarks, copyrights, land use rights, goodwill, etc. Deferred asset is the loss and profit that should be calculated in future years like start-up costs, improvement of the rented fixed assets and other expenses.

Liability is the business transaction or events happened in the past and will cause economic benefit outflow. It was divided into current liabilities and long-term liabilities according to the length of repayment.

Current liability contain short-term borrowings, accounts payable, notes payable, deposit received, taxes payable, employee benefits payable，interest payable, dividends payable, other payable, accrued liabilities and long-term debt. The cause of current is various. Some is formed in the process of financing, like short-term loans. Some is formed in the process of settlement, such as interest payable. Some is formed because of the distribution process, for example, dividends payable. Account payable is the payment that due to the purchase of materials, goods of services and didn't pay. Deposit received is the money that should be charge in advanced because the sales of products and supply of services. Taxes payable is the taxed that should paid because of the law. According to different collection objects, it can be divided into turnover tax (value-added tax, consumption tax, business tax, etc.), income tax (enterprise income tax, individual income tax, etc.) and other taxes (construction tax, resources tax, stamp tax etc.) Employee benefits payable is the various forms of expenditure that company should pay to gain the labor of employees. Long-term debt is the debt that repayable period is more than one year. It has long repayable period and usually has a large amount and high borrowing cost. It contents long-term loans, bond payable and long-term payables.

Shareholders' equity is the remaining parts after subtract liability in the total asset. It is the sum of share capital, capital reserve, surplus reserve and retained earnings. It represented the ownership of shareholders and can give real profit to shareholders.

2.2.2 Income statement

Income statement is the financial statement that shows the operating results and distribution in a certain period, usually in one year. It compares the income and expenditure in a period to calculating the net profit. Income statement explains the situation of production and operating cost. It compares the data in different period, which helps analyzing the trend of profit and profitability. For better understanding of the information, we need not only understand the data that supplied in the statement, but also doing some comprehensive analysis on the relative data to know the main resource and composition of the profit to judge the quality and risk of a company.

Income statement shows the statue of capital and debt of a company in a specific time. It is static. Here is an example of income statement.

Table 2.2 Example of income statement

SALES REVENUE
Cost of Goods Sold
Gross profit
Operating expenses
Selling expenses
Advertising expense
Commissions expense
Administrative expenses
Office supplies expense
Office equipment expense
TOTAL OPERATING EXPENSES
Operating Income
Non- Operating or other
Interest revenue
Gain on sale of investments
Interest expense
Loss from lawsuit
TOTAL NON-OPERATING
NET INCOME

Source: Alvarez (2002)

In income statement, the basic principle is

$$Net\ profit = Total\ Revenue - Total\ Expenditure \quad (2.2)$$

The first part of income statement is revenue. It is the amount of money that earned because of the ability of company. It is the amount if money or accounts receivable that company sales the goods or services to customers. The second part of income statement is expenditure, which contains all expenditure relative to revenue. There're two kinds of expenditure, selling expenses and administrative expenses. Selling expense is the costs that directly used in making and purchasing of the product. It is a sum of material costs, wages of employee and manufacturing costs.

2.2.3 Cash flow

Cash flow is the financial statement that shows the cash and cash equivalents inflow and outflow in a certain period, usually one year.Cash flow is divided into three parts, which is operating activities, investing activities and financing activities. Each type of activity has specific items that can show the business activities from different. It is a make up for balance sheet and income statement. Here is an example of cash flow

Table 2.3 An Example of Cash Flow

Cash flow From Operation
Net earnings
Additions to Cash
Depreciation
Decrease in Accounts Receivable
Increase in Accounts Payable
Increase in Taxes Payable
Subtractions from Cash
Increase in Inventory
Net cash from Operations
Cash flow from Investing
Equipment
Cash flow from Financing
Notes Payable
Total Cash flow

Source: Alvarez (2002)

In cash flow statement, cash and cash equivalent is considered as a whole. The form change of cash inside company will not cause cash inflow and outflow. The change between cash and cash equivalent is not in the cash flow as well. Cash flow statement is a dynamic table, mainly shows the increase and decrease in a period. It is evaluated by cash, which means we can judge more accurate the solvency and to decide whether make adjustment to company or not. For investors, it is also a very important index to decided whether the company is suitable for invest or not.

2.3 Common-size analysis

The numbers in financial statement is absolute. It is used to analyze the situation of company. However, the efficient of company is relative. It is a comparison to a specific object or comparison with different. To make this relative analysis, we use common-size analysis.

Common-size analysis use a sum of some items as 100% and calculate the percentage of constitute project to know the importance of them. It is a way to change absolute number to relative weight. It can also compare to another company to see its structure. It is very useful to analyze the inside component of a single company and see the difference in division of recourse. The advantage of common-size analyze is to help to get rid of the influence of the scale economics and make it possible for comparison in companies with different asset and profit. It provided useful information to different company and industry.

The common-size analysis is used on both three types of statements. The goal to analyze balance sheet is to know the proportion of each item of asset and liabilities and to know which part to increase or decrease. It can help to see the financial structure. The goal to analyze income statement is to know the proportion that cost of goods sold in total and to decided which part of cost to take in control. The main seek to analyze cash flow statement is to know the resource of cash and the proportion and the items that cause cash outflow to know the stability of cash inflow and outflow.

There are two ways to do the common-size analyze, which is vertical analysis and horizontal analysis.

2.3.1 Vertical analysis

Vertical analysis is a percentage analysis of relationship of each component in a financial statement within the statement. It analyzes the component of different item and analysis the structure of total. The way to calculate the percentage is

$$\%\ of\ each\ item\ = \frac{x_i}{\sum_{i=0}^{n} x_i} \qquad (2.3)$$

It is useful in comparison of several companies in the same industry or sees the structure within the company in a certain period. It expresses all items in percentages. The analysis is static. It is based on the data in a certain date or an accounting period. Although the analysis is inside a single statement, it can be applied over time.

2.3.2 Horizontal analysis

Horizontal analysis put more attention on the trend change. It is a percentage analysis of the increases and decreases of component. The analysis reviewed and analyzed the financial statement for a period. It helps managers to look at the insight levels and areas of strength and weakness and see the changes among year. The accounting period is various.

There are two ways to do the horizontal analysis, which is absolute change and relative change. It can be performed in both three statements. Absolute change method is a comparison of simple amount changes over time.

$$\Delta I_{abs} = I_t - I_{t-1} \qquad (2.4)$$

Where I_{abs} is Absolute change.

Relative change is the change of item that compares to another item. This method is useful when comparing companies with different scale.

$$\Delta I_{rel} = \frac{I_t - I_{t-1}}{I_t} \qquad (2.5)$$

Where I_{rel} is relative change.

The difference between vertical analysis and horizontal analysis is that vertical analysis evaluates the amount on the statement as a proportion of another item. Horizontal analysis forces

on the change of items and evaluates its tendency. Vertical analysis and horizontal analysis are both important part of financial statement analysis.

2.4 Financial ratio

Financial ratio analysis is the easiest and clearest analysis method. It compares the important data in the statement and calculates the ratio. It not only compares the company's situation in different year, but also can help you compare different companies in the industry. It can eliminate the influence of scale economics and is very useful to compare the profit and risk in different company. The theory in this chapter is based on Hitchner (2010).

The advantage of ratios analysis is that first, you can collect the items you need and calculate the relationship of these items to gain information. Second, it simplified a large number of numbers, which makes it easier to comparison and easy to understand. Third, it can help you compare the data within the company in different period to know the progress and predict the future. It can also help the company make comparison with competitors to know the plan. However, there are still some things we need to concern. First, ratio is only a mathematical abstract. It is not the real quantity. We cannot only see the ratio and ignore the real amount. Second, the limited of financial statement will also limit the ratio. Third, the ratios are relative. We cannot only look at a simple ratio but should take more concern on the comparison. Also, we cannot cover all items in the statement. We still need to analyze the statement. Last, we should be aware of problems cannot shown by ratio like the company policies.

There are four kinds of ratio, which are profitability, leverage, liquidity and activity. In this thesis we mainly use the profitability and liquidity ratio.

2.4.1 Profitability Ratio

Profitability ratio is the ability of a company to earn profits. It usually shows in the form of the quantity and level that company earned. Profitability measures the company's ability to return to its shareholders. For a company, the analysis of profitability can help them know the problem in

the run and management of company. When analyze the profitability, we should excluded the unusual items like purchase and sell of the securities, the business items that is already stop.

There are four kinds of index that can evaluate the profitability. The first is **operating profit margin.** It evaluates the relative profit of company after minus the costs. It measures the efficiency of company in price making and controlling of cost of product.

$$Operating\ \ profit\ margin = \frac{Operating\ Profit}{Net\ Sales} \tag{2.6}$$

Operating profit margin reflects the ability that a company generates profits to cover and exceed the operating costs. The higher the operating profit margin is, the operating profit that provided by sales is more, the profitability of company is better. There are many factors that will affect the operating profit margin. For example, the quantity of sale, average price of product per unit, the cost of product pro unit, the ability to control management costs and marketing cost.

Another important index of profitability is **gross profit margin**. It shows the net profit that each unit of sale gains. It is the basic of operating profit margin. There will be no earning if the gross profit margin is small. It can help the company analyze the balance of sales and costs.

$$Gross\ Profit\ \ Margin = \frac{Gross\ Margin}{Net\ \ Sales} \tag{2.7}$$

Gross profit measures the ability of company to change an acceptable mark on its product in the face of competition. t is most useful when doing a comparison with competitors or the whole industry. If the gross profit margin is low, the gross profit of company is low and the profitability is not high, which may cause loss in business. The ratio can help us do the comparison of costs and sales. There are three factors that will influence the gross profit margin, which is price, cost and product portfolio. The gross profit margin of a company is portfolios of different product thus the change of the gross profit margin will influence the whole.

Return on equity(ROE)reflect the ability of company to earn net income from every unit of common shareholders' equity. It is one of the most important financial ratio. It shows the level of shareholders' earning.

$$ROE = \frac{Net\ Income}{E} \tag{2.8}$$

Where E is Common shareholders' equity.

ROE measures the return after tax on the equity of company. It measures the ability of a company to generate earnings from each unit of shareholders' equity. The higher the ROE is, the earning that the investment will bring stockholders is higher, and the ability of company use the resources are better. There are many factors that will influence the ROE, like total assets, liabilities, interest rates, capital structure and tax rate.

Return on assets(ROA) shows the ability that each units of asset can earn. It is the comparison of net profit and average total assets. It is a comprehensive index. The quantity of net value is closely relative to the asset of company and the structure of asset and the level of management.

$$ROA = \frac{Net\ Income + Interest \cdot (1 - Tax\ Rate)}{A} \tag{2.9}$$

Where A is Total Asset.

Return on Asset measures the return after tax on asset of company. It can increase the concentration in all aspects of company asset and helps increase the ability that profitability level of company. In general situation, company can use this index to compare with the capital interest in market. If the index is better than market rate, it shows the company can use the whole finance and doing debt management, it can help the company gets more revenue. The better the index is, the output of company input is better and the efficiency of company is better and the efficiency of company to use asset is better. It means the company earns better result of company in increasing the profit and saving the money. The influencing items of ROA are product of product, the level

of production cost per unit, the output of company and the quantity of sales, amount of funds used. It can helps a lot in analyzing the company.

2.4.2 Liquidity Ratios

Liquidity ratio is very necessary in financial analysis of a company. It measures the ability that company generates cash. It depends on the amount that company can change asset into cash and fulfill its short-term debt obligations. The higher the liquidity ratio is, the company is more efficient to pay for short-term loans and generate cash, and the company is safer. If the ratio is over 1, the company can pay for all short-term debt. There are two kinds of liquidity ratio, current ratio and quick ratio.

Current ratio, also known as working capital ratio and real ratio, shows the percentage that current asset contains in current liabilities. It measures the ability of company's liabilities to change into cash and pay for short-term loans before maturity.

$$Current\ Ratio = \frac{CA}{CL} \tag{2.10}$$

Where CA is Total Current Asset, CL is Current Liability.

Current ratio is the most commonly used ratio in evaluating company's liquidity. It compared the average ability to earn insight into the company to fulfill its own debt with its current asset. It requires that company should have remaining cash to pay for the business activities after finish paying all the current liabilities. The main influencing factors are the time of business cycle, the amount of account receivable and the speed of inventories.

The higher the current ratios, he current asset is more and there will be less debt, the company has more liquidity. However, because the different situation of a company, the requirements of current ratio for company is different. If the ratio too high, it means the proportion of cash. Too many cash stay in liquid form is a waste. It will decrease the efficiency and decrease the speed of produce and selling goods. If the ratio is too low, it will affect the financing ability and will influence the run of company. In general, the best current ratio around 2, which means the current asset is two times more than current debt. Even if half of the asset cannot change into cash, the

company can still pay all the debt and didn't influence its running. The current ratio is not the only index to evaluate the solvency of company. Some company, especially the high-quality company can still pay out debt by borrow other debt.

Quick ratio, also known as acid-test ratio is the percentage that quick asset contains in current liabilities. It measures the ability to change liquidity asset into cash to pay out debt. Quick ratio includes cash, shot-term investments, notes receivable, accounts receivable, other receivable. The inventory, prepaid receivable, prepaid expenses are not including.

$$Quick\ \ Ratio\ = \frac{CA - Inv.}{CL}$$

or

$$Quick\ ratio = \frac{Cash + Cash\ Equivalrnts + Short - term\ Investments + Account\ \text{Re}cieveable}{CL}$$

(2.11)

Where Inv. is Inventory.

The quick ratio directly shows the short-term solvency of company. It is a supplement to the current ratio. It can show the solvency better. Because though in current asset, some items have high flexibility like cash and cash equivalents, short-term investments and account receivable, inventory and prepaid expenses has very low flexibility. Especially the inventory may have depreciation and hard to change to cash. These causes a company with high liquidity has low solvency. So we exclude the inventories in current assets to calculate the ratio. If a company has high current ratio and low quick ratio, the solvency is still low. Generally speaking, if a company has high quick ratio, the solvency of company is high. The quick ratio should be kept more than 100%. The ratio of company is lower than 1, it is considered as low solvency. The influence factors of quick ratio are account receivable, short-term loan, notes receivable and prepaid payments.

2.5 Pyramidal decomposition

Pyramidal decomposition is to decompose the influence factors of an index and calculate the amount that each items cause on the index. It measures the ability of each component and evaluates which item to increase. The principle is to express basic ratio as a product of component ratios. The theory this chapter is based on Zdenek (2004)

In principle, there are two approached. It is very exactly expressed. One of the typical examples is ROE model. It is easy to compute and relatively easy to interpret. It can be expressed as

$$ROE = \frac{Net\ \ Income}{Average\ Total\ \ Asstes} \cdot \frac{Average\ Total\ \ Assets}{Average\ Common\ Shareholder's\ \ Equity} \tag{2.12}$$

To expand version, we then use income margin and sales turnover as

$$ROE = \frac{EAT}{S} \cdot \frac{S}{A} \cdot \frac{A}{E} \tag{2.13}$$

Where EAT is net income, S is sales, A is average total assets and E is average common shareholders' equity.

We use the final decomposition to so the further analysis. We use these cost efficiency and turnover as

$$\begin{aligned} \frac{EAT}{S} &= \frac{EAT}{EBT} \cdot \frac{EBT}{EBIT} \cdot \frac{EBIT}{S} \\ &= (1 - \frac{TAX}{EBT}) \cdot \frac{EBT}{EBIT} \cdot (1 - \frac{Cop}{S}) \\ &= (1 - \frac{TAX}{EBT}) \cdot \frac{EBT}{EBIT} \cdot [1 - (\frac{Cadm}{S} \cdot \frac{Csal}{S} \cdot \frac{Cres}{S}) \end{aligned} \tag{2.14}$$

and

$$\frac{S}{A} = \frac{360}{\frac{A}{S} \cdot 360} = \frac{360}{\frac{FA}{S} \cdot 360 + \frac{CA}{\frac{S}{A} \cdot 360}} \tag{2.15}$$

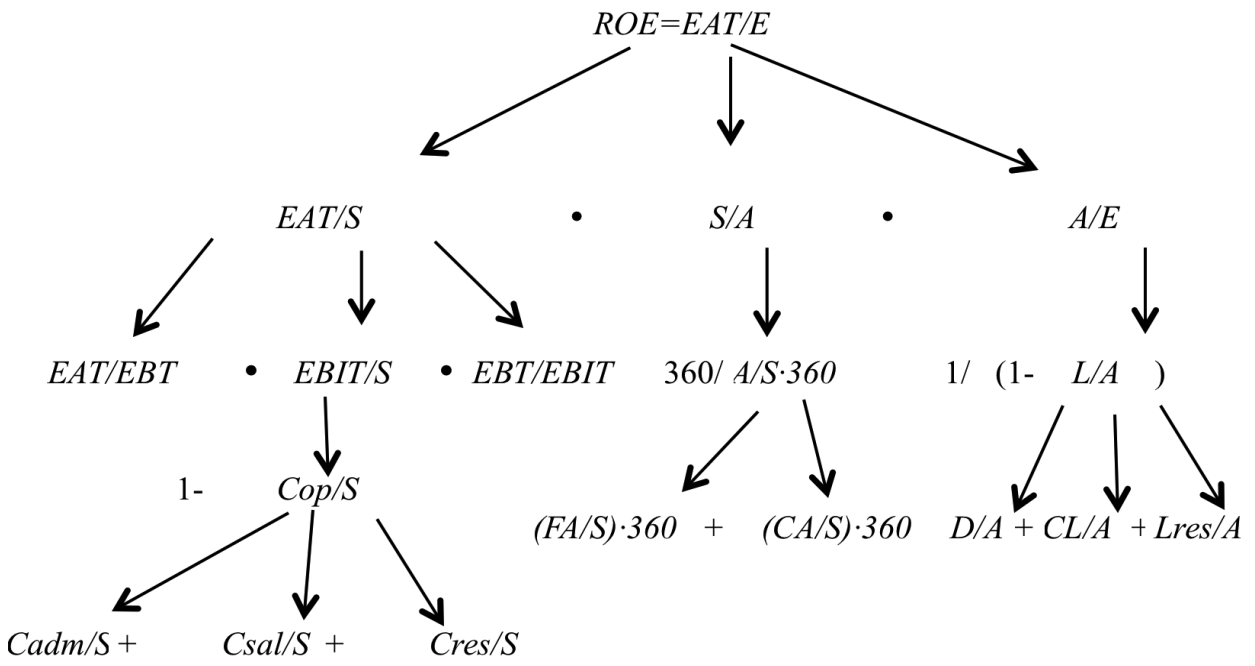
also

$$\frac{A}{E} = \frac{1}{1 - \frac{L}{A}} = \frac{1}{1 - (\frac{D}{A} + \frac{CL}{A} + \frac{Lres}{A})} \tag{2.16}$$

Where Cop is Operating Costs, Cadm is Administrative Costs, Csal is Cost of Sales, Cres is Rest of Operating Costs, I is Interests, EBIT is Earning before interest and tax, EBT is earning before tax and EAT is earning after tax.

So we get the final decomposition of ROE as the image below

Image 2.1 Decomposition of ROE



Source: Zmeskal (2004)

The additive operations to do the pyramidal decomposition is as follow

$$\Delta x_{a_i} = \frac{\Delta a_i}{\sum_i \Delta a_i} \cdot \Delta y_x \tag{2.17}$$

There are 3 ways to do the multiplicative pyramidal decomposition, which is gradual change, which are gradual change, logarithmic decomposition method and function decomposition method. In this thesis we only use the gradual change method and logarithmic decomposition.

The **Method of gradual change** enables to qualify the change in basic ratio caused by the change in the component ratio. In the case of decomposition with 3 component ratios,

$$\Delta y_x = \frac{x_1}{x_0} = (a_{1,1} \cdot a_{2,1} \cdot a_{3,1} - a_{1,0} \cdot a_{2,0} \cdot a_{3,0}) \cdot \frac{\Delta y_x}{\Delta x} \tag{2.18}$$

After calculation, we get

$$\Delta y_x = \Delta x_{a_1} + \Delta x_{a_2} + \Delta x_{a_3} \tag{2.19}$$

Influence is qualified without a residue due to (2.18) as follow

$$\begin{aligned}
\Delta x_{a_1} &= \Delta a_1 \cdot a_{2,0} \cdot a_{3,0} \cdot \ldots \cdot a_{n,0} \cdot \frac{\Delta y_x}{\Delta x} \\
\Delta x_{a_2} &= a_{1,1} \cdot \Delta a_2 \cdot a_{3,0} \cdot \ldots \cdot a_{n,0} \cdot \frac{\Delta y_x}{\Delta x} \\
&\vdots \\
\Delta x_{a_n} &= a_{1,1} \cdot a_{2,1} \cdot a_{3,1} \cdot \ldots \cdot \Delta a_n \cdot \frac{\Delta y_x}{\Delta x} \\
\Delta x_{a_i} &= \Delta a_i \cdot \prod_{j<i} a_{j,0} \cdot \prod_{j>i} a_{j,1} \cdot \frac{\Delta y_x}{\Delta x}
\end{aligned} \tag{2.20}$$

The logarithmic decomposition method can help us use only one formula to calculate the impact quantification raggedness of the quantity of component. This method is characterized by the decomposition of the influence without a residue.

$$\Delta y_x = \sum_t \Delta x_{a_i} \tag{2.21}$$

So we calculate the indicator as

$$\begin{aligned}
I_x = \frac{x_1}{x_2} &= \frac{a_{1,1}}{a_{1,0}} \cdot \frac{a_{2,1}}{a_{2,0}} \cdot \ldots \cdot \frac{a_{n,1}}{a_{n,0}} \\
&= I_{a_1} \cdot I_{a_2} \cdot \ldots \cdot I_{a_n} = \prod_i I_{a_i}
\end{aligned} \tag{2.22}$$

We than do more calculation and get that

$$\Delta x_{a_i} = \frac{\ln I_{a_i}}{\ln I_x} \cdot \frac{\Delta y_x}{\Delta x} \tag{2.23}$$

3. Basic Characteristics of Tsingtao Brewery Limited

Tsingtao Brewery Company Limited was founded by both British and German in 1993 and now it is the largest company in brewery industry. In this chapter we will introduce the basin information of Tsingtao first and then introduce the basic data of Tsingtao Brewery. There will be also some common size analyze in this chapter to give a brief impression of Tsingtao Brewery Company Limited.

3.1 Basic information of Tsingtao Brewery Company Limited

In this part we will give a brief introduction of the chosen company. Tsingtao brewery is the oldest brewery company in China. Through this part we will know the history, main achievements and strategy of Tsingtao Brewery.

Tsingtao Brewery Company limited was founded in 1993. The earliest version of this company was the state-owned Qingdao Brewery founded by both British and German businessmen as a joint venture. It wins almost all of the awards of beer competitions and also many international Awards. Tsingtao brew masters use some of the finest ingredients from around the world—yeast from Germany, barley malt from Australia, Canada and France, hops and rice from Western China and finally, fresh spring water from China's Laoshan Mountain. At that time the annual production was planned to be 2000 ton.

Tsingtao Brewery Company now has over 53 beer manufacturing enterprises at 18 different province of China. Tsingtao brewery was sold to more than 80 countries and regions including American, Japan, German, and France etc.

Tsingtao Brewery Company account more than 50% of China's export of beer and is the first in this industry. It also win many gold medals of competitions held around the world. In 1906, it won the gold medal in Munich International Fair. In 1980s, it won the first place of American International Beer Competition. It also won the first place in Belgium, Singapore and Spain international competitions. In 1999, it was the only selected company of "top 50 brand in Asia". In 2006, Tsingtao Brewery topped the "Forbes"of" top 200 Global credit enterprises 2006" of the

68th position. It won the title of "Most respected enterprises in China "7 times. In 2010, Tsingtao brewery was records the 5th time in "Fortune" as the most admired Chinese company.'

Tsingtao has a marketing model named "1+3", which is product sales, the brand communication, consumer experience "trinity" brand and a level 3 brand management model, which helps in brand's creation, development and maintenance. Brand value of Tsingtao has rising rapidly in recent years and become a big advantage when expansion. Good brand image and high brand awareness let Tsingtao brewery has very strong awareness and loyalty in position market. In the work plan, Tsingtao proposed "integration and innovation, and improve core competitiveness" as strategic approach. The main focus was not only on the increasing mergers and acquisitions, but also on the integration of the company in order to search for new profit growth.

Tsingtao not only increase the market share of domestic and foreign market on its own, It has already begun to cooperate with International capital to complement advantages, walking the path of the powerful combination of common development.

3.2 Basic data of TSINGTAO Brewery

In this part we will show some basic data of the company, which is useful for, analyzes. The table has been simplified.

Table 3.1 The Simplified balance sheet of TSINGTAO Brewery

ASSETS	**2009**	**2010**	**2011**	**2012**	**2013**
Cash & Short Term Investments	**6,077**	**8,963**	**7,537**	**8,856**	**10,927**
Total Accounts Receivable	**280**	**344**	**545**	**596**	**1,190**
Inventories	**2,132**	**2,291**	**3,354**	**2,936**	**3,246**
Other Current Assets	**158**	**74**	**391**	**230**	**357**
Total Current Assets	**8,648**	**11,672**	**11,826**	**12,617**	**15,721**
Net Property, Plant & Equipment	6,388	6,835	9,661	11,468	12,090
Total Investments and Advances	174	181	188	213	1,680
Long-Term Note Receivable	2	2	-	-	-
Intangible Assets	1,375	1,701	4,270	4,514	4,627

Other Assets	26	189	267	20	34
Non-current Asset	**8,238**	**9,299**	**14,870**	**16,819**	**19,328**
Total Assets	**16,886**	**20,971**	**26,696**	**29,436**	**35,049**
Liabilities & Shareholders' Equity					
ST Debt & Current Portion LT Debt	**309**	**336**	**307**	**288**	**2,608**
Accounts Payable	**1,201**	**1,489**	**2,051**	**2,480**	**3,467**
Income Tax Payable	**242**	**276**	**328**	**125**	**195**
Other Current Liabilities	**3,751**	**4,995**	**6,144**	**6,234**	**7,964**
Total Current Liabilities	**5,502**	**7,097**	**8,830**	**9,126**	**14,234**
Non-current Liabilities	**1,449**	**1,543**	**2,468**	**2,539**	**863**
Total Liabilities	**6,951**	**8,640**	**11,298**	**11,665**	**15,087**
Non-Equity Reserves	209	865	1,483	1,868	2,192
Common Equity (Total)	9,337	11,328	13,710	15,511	17,957
Total Equity	**9,726**	**11,466**	**13,915**	**15,903**	**17,769**
Liabilities & Shareholders' Equity	**16,886**	**20,971**	**26,696**	**29,436**	**35,049**

Source: Annual report of Tsingtao Brewery company from 2009 to 2013. For full version see annex 1.

Table 3.2 The Simplified Income Statement of TSINGTAO brewery

	2009	**2010**	**2011**	**2012**	**2013**
Sales/Revenue	**18,971**	**22,834**	**25,952**	**29,552**	**33,466**
Cost of Goods Sold	**11,671**	**13,016**	**16,378**	**19,246**	**21,568**
Gross Income	**7,300**	**9,818**	**9,574**	**10,305**	**11,898**
Total expense	**5,329**	**7,392**	**6,623**	**7,269**	**8,546**
Pretax Income	**1,971**	**2,426**	**2,951**	**3,036**	**3,352**
Income Tax	**500**	**618**	**792**	**786**	**873**
Interest paid	**549**	**681**	**858**	**874**	**862**
Net Income	**1422**	**1745**	**2093**	**2162**	**2490**
Net Income After Extra ordinaries	**1,422**	**1,745**	**2,093**	**2,162**	**2,490**
Net Income Available to Common	**1,422**	**1,745**	**2,093**	**2,162**	**2,490**

EPS (Basic)	**1.08**	**1.29**	**1.55**	**1.6**	**1.84**
Basic Shares Outstanding	**1,315**	**1,351**	**1,351**	**1,351**	**1,351**
EPS (Diluted)	**1.08**	**1.29**	**1.55**	**1.6**	**1.84**
Diluted Shares Outstanding	**1,315**	**1,351**	**1,351**	**1,351**	**1,351**
EBITDA	**2,528**	**2,910**	**3,381**	**3,436**	**3,490**

Source: Annual report of Tsingtao Brewery Company from 2009 to 2013. For full version see annex 2.

Table 3.3 The Cash Flow Statement of TSINGTAO Brewery

	2009	**2010**	**2011**	**2012**	**2013**
Net Income before Extra ordinaries	1,474	1,819	2,165	2,268	2,492
Depreciation, Depletion & Amortization	622	642	840	1,037	1,117
Deferred Taxes & Investment Tax Credit	-170	-109	-96	-152	-304
Other Funds	231	210	256	87	-428
Funds from Operations	2,158	2,562	3,165	3,240	2,877
Changes in Working Capital	1,668	1,208	-846	856	1,479
Net Operating Cash Flow	**3,826**	**3,770**	**2,320**	**4,096**	**4,355**
Capital Expenditures	-817	-1,267	-2,940	-2,924	-2,569
Net Assets from Acquisitions	**0**	**0**	**-2,130**	**0**	**-115**
Sale of Fixed Assets & Businesses	10	21	44	16	15
Purchase/Sale of Investments	-234	-200	0	-5	50
Other Uses	-33	-191	-639	-376	-424
Other Sources	30	758	860	556	1,092
Net Investing Cash Flow	-1,045	-878	-4,805	-2,733	-1,951
Cash Dividends Paid - Total	0	-266	-	-	0
Issuance/Reduction of Debt, Net	-352	-3	432	-27	-214
Other Funds	887	-30	-366	-455	-767
Net Financing Cash Flow	**535**	**-299**	**66**	**-482**	**-981**
Exchange Rate Effect	4	-4	-4	3	-2
Net Change in Cash	3,321	2,589	-2,424	884	1,420
Free Cash Flow	3,009	2,503	-621	1,172	1,786

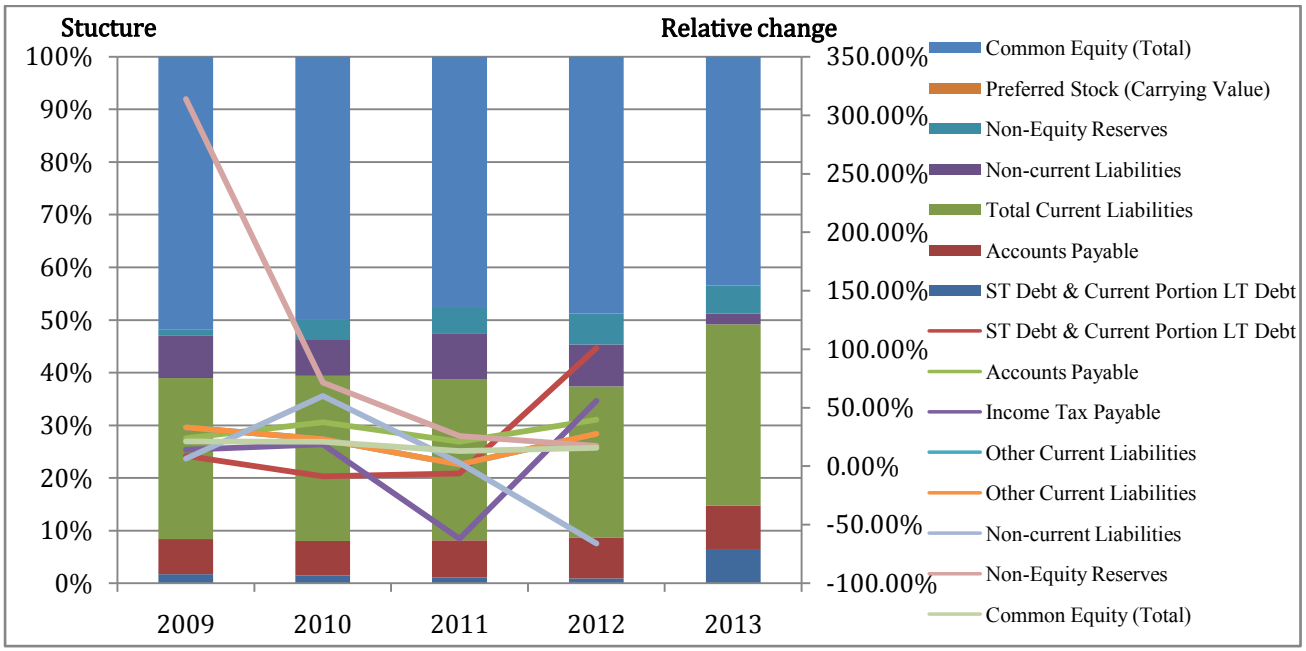
Source: Annual report of Tsingtao Brewery company from 2009 to 2013. for full version see annex 3.

3.3 Financial analysis of the company

3.3.1 Common-size analysis of balance sheet

In chapter 2 we have already known the way to do common-size analysis. In this chapter we will put the methodology in to practice and use both vertical and horizontal to balance sheet, income statement and cash flow. We can use the formula (2.3) and (2.5) to do the calculation. For balance sheet, we divided it into the asset and liability and Shareholders' Equity and analyze it separately. For income statement, we analyze the cost of goods, revenue and total expense separately to have better understanding.

Chart 3.1 Common-size analysis of balance sheet (Total assets)



From chart 3.1 we can see the vertical and horizontal analysis of Tsingtao Brewery Company from 2009 to 2013. The left axis is the vertical analysis, which analyze the structure. The right side of axis is horizontal analysis, which analyze the relative change. First we will do the vertical analysis. During the fiscal year 2009 to 2013, the proportion of each part of assets has a little bit change but it still very stable. The item cash & short term investments, total accounts receivable, inventories, other current assets is part of current asset and net property, plant & equipment, total Investments and Advances long-Term Note Receivable intangible Assets belongs to non-current assets. It can be seen very clearly that total current asset and non-current asset takes up the major

part of asset. Current and non-current asset fluctuated around 50%. From 2009 to 2010, the biggest part of asset is current asset. The situation changed from 2011 to 2013. The non-current asset becomes the biggest part, taking up more than 55%.

Tsingtao brewery company hold a high percentage of cash and short term investments, in most time more than 30%, even more than 40% in come fiscal year. This part of asset has high liquidity and makes the company more risky. Another big part of current asset is inventories, which takes up around 10%.

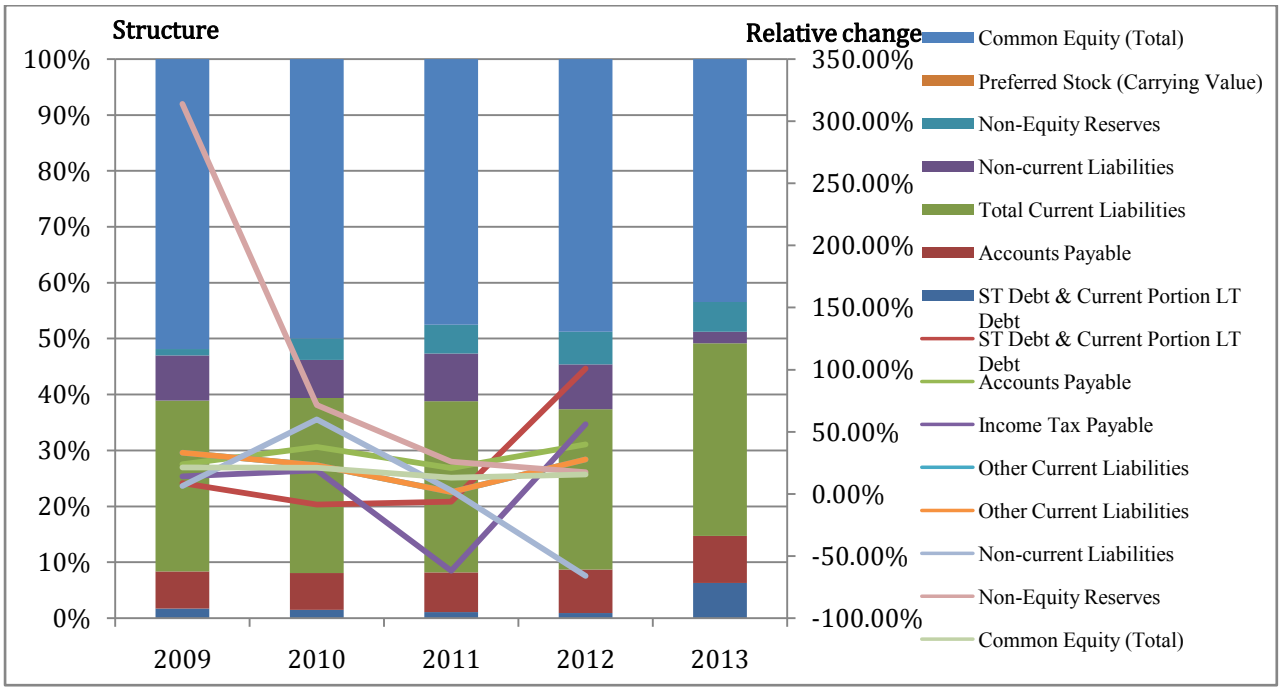
The major part of non-current asset is net property, plant and equivalent. It makes up more than 30% of total asset. Intangible asset is also an very important part of non-current asset, which is around 10%.

In balance sheet, total asset equals total liability and equity. In chart 3.2 will shows the component of Liabilities & Shareholders' Equity of the company

Then we will do the horizon analysis. Horizontal analysis can help us compare financial information over time. It analyzes the increase and decrease of items in percentage. Horizon analysis can help us see the percentage change easily.

From chart 3.1 we can see the horizon analysis from the secondary axis. It changes more than 400%. From 2009 to 2010 and 2011 to 2012, the percentage change was below zero. From 2012 to 2013, there's a positive change, which increase for more than 50%. From fiscal year 2009 to 2010, the percentage change of cash and short term investments, total accounts receivable and inventories is positive and there's an increase tendency. The non-current asset is decrease in that time. There's a decrease tendency from 2010 to 2011 for cash and short-term investments, total accounts receivable and inventories and cash and short-term investment was below zero at that time. After 2012, all the items increase and the tendency seems to continue.

Chart 3.2 Common-size analysis of balance sheet (Total Liabilities & Shareholders' Equity)



During the fiscal year 2009 to 2013, the structure of total liability and shareholder's equity is very clear. The item non-equity reserves, common equity and preferred stock belongs to total liability and the item non-equity reserves, preferred stock and common equity belongs to total equity. We can see from the chat that from 2009 to 2012, the biggest part is total liability, which takes up more than 50%. In 2013, the major part is total equity because an absolute increase in ST Debt & Current Portion LT Debt.

Total current liabilities take up more than 30%, which has a big influence in the company. The percentage of it was very stable, except a little decrease in 2012. Accounts payable is also a vital part of total liabilities, which takes up around 5% in total.

Common equity is very important for Tsingtao Brewery Company. We can see from the chart 3.2 that it makes up over 45%, sometimes over 50%. Common equity is the amount that stockholders invest in a company. Because common stock holders have voting rights, these make the company loss of control. Ownership is transferred outside which makes entrepreneurs hard to control the company. Another important part of total equity is non-equity reserve, though it takes up only a small percentage in total liabilities and total equity.

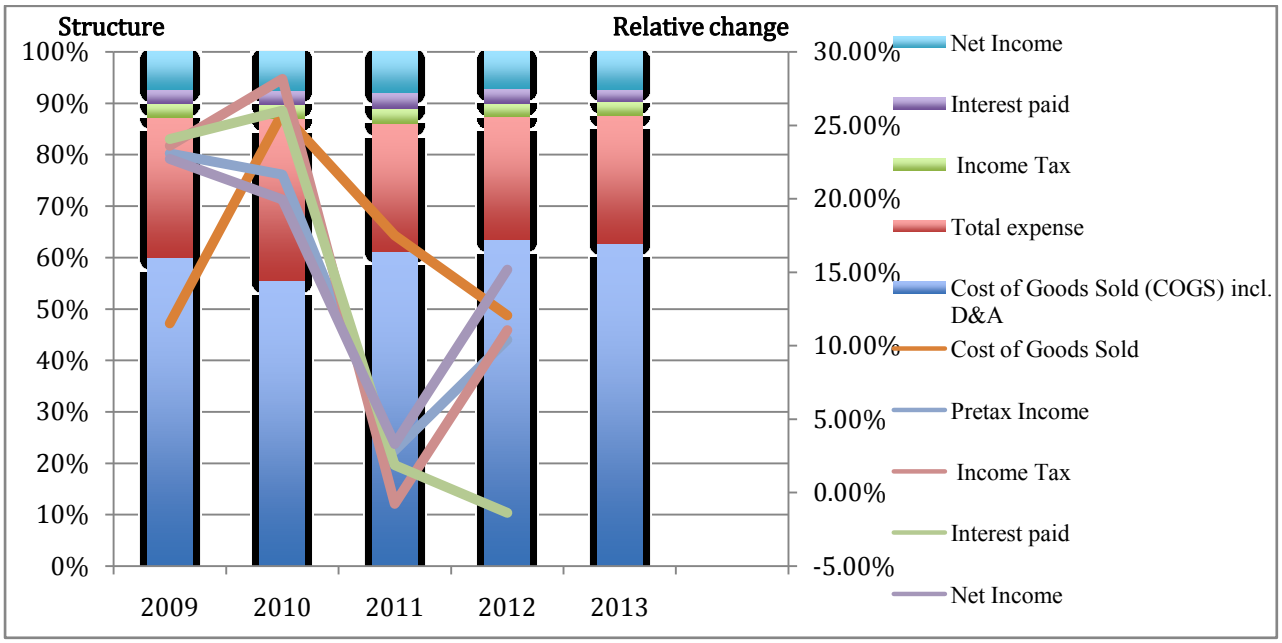
For horizon analysis, first we will analyze the liabilities. Then we will analysis the equity. From 2009 to 2011, non-current liabilities have increase to 60% and then it keeps decreasing to below 60% in 2013. The ST debt and current portion LT debt decreased from 2009 to 2010. It then goes into a stable period from 2011 to 2012 and then sharply increases after 2012. Account payable is fluctuated between 20% and 40%. Income tax payable is near 20% and has less change from 2010 to 2011. In 2011 to 2012 it decrease to -60% and increase to more than 50% from 2012 to 2013. Other current asset was decrease from more than 35% to nearly 0% from 2009 to 2012. From 2012 to 2013 it increase to more than 20. Most of the items have a tendency to decrease from 2009 to 2012 and increase clearly after 2012.

About equity, there's only two items of equity, common equity and non-equity reserves. The common equity is very stable. It changes between 10% and 20%. The lowest happened in the period 2011 to 2012, which is around 10% and the highest is in 2009 to 2010. On the contrary, there's a very big change in non-equity reserves. It changed over 300% from 2009 to 2010. Then it decreases to 70% in 2010 to 2011. After that it has a stable period, in an increase tendency of 10% to 20% from 2011 to 2013.

3.3.2 Common-size analysis of Income statement

This section includes the vertical analysis of income statement.The income statement shows the company's revenue and lost from 2009 to 2013. Items of income statement are separated into two parts, according to composition and distribution of revenue. Composition of revenue shows the revenue at first, and minus cost of good and calculates gross income. Then it calculates pretax income by minus the total expense. Finally it calculates net income by minus the tax paid. The distribution of revenue is showed by calculate the revenue after tax, then it calculates the profit payable and the balance is the undistributed profit.

Chart 3.3 Common-size analysis of income statement

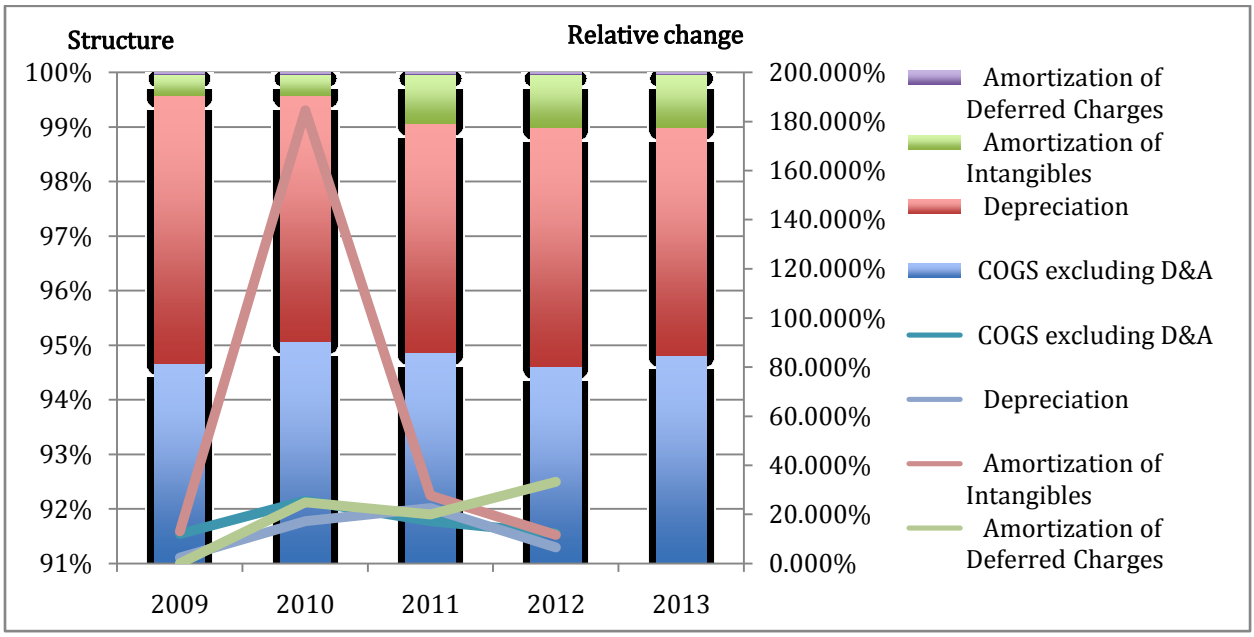


From chart 3.3 we can see the basic structure of revenue of the company. The major part is cost of good sold, which takes up more than 55%. The lowest cost of goods occurs in 2010, which is around 55%. In other year the percentage is around 60% to 65%. The big amount of cost makes the company have fewer amounts in net income. Another big part of revenue is expense. It takes up nearly 25% of total. These two items makes up more than 85%, which makes the company only have less than 5% of net income. In the next part we will do the vertical analysis of cost of goods sold and total expense to see more detail about the company.

As for the horizontal analysis, The most rapid one is total expense. It increases about 40% from 2009 to 2010 and then decreases to 10% below zero. Cost of goods sold, income tax, interest paid all have some increase and was beyond zero. From the period 2011 to 2012, these four items all have some decrease and is around 0% to 20%. After 1012, net income, income tax have increased. Cost of goods sold and interest paid still decrease at that time.

In order to see the structure of income statement more clearly, we use the total cost as 100 percent and can see the basic component of total cost.

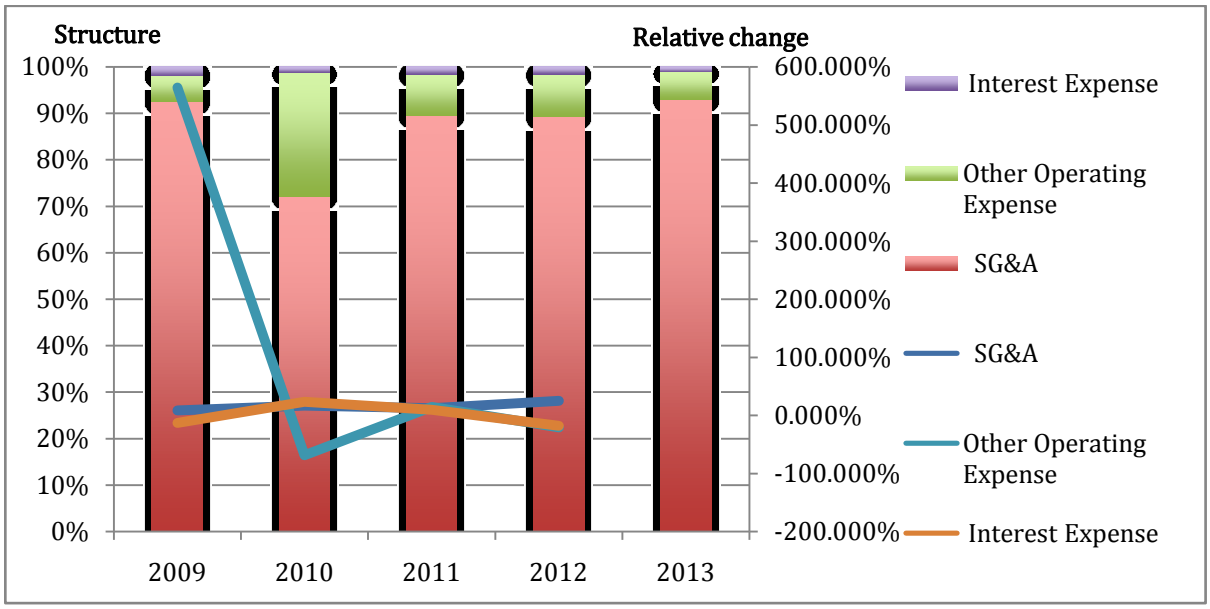
Chart 3.4 Common-size analysis of income statement (Cost of goods sold)



The biggest part of cost is cost of goods sold excluding depreciation and amortization. It takes up more than 94% of total and in some fiscal year even more than 95%. If the company makes some improvements in this part, there will be a big increase in income. Another big form of cost is depreciation. It takes over 4% of total and in some fiscal year like 2009 and 2010, the percentage even become more, which is 5%. Amortization cost includes amortization of deferred charges and amortization of intangibles. Amortization of intangibles takes up only a small percentage in 2009 and 2010. It becomes more in the next 3 years and is around 1%. Amortization of deferred charges only has a small percentage in total.

For horizontal analysis, we can see obviously that the most sharply changed one is amortization of intangibles. From 2009 to 2010, it increases for 13% but in 2010 to 2011, it increases for 184%. From 2011 to 2012 it decrease to 20& and keep decreasing in the next period. As for depreciation m it keeps increasing from 2009 to 2011 and increase from 2% to 22%. And it decreases to 6% from 2012 to 2013. The Cost of goods sold increase fro 11.992% to 25.570% from 2009 to 2012. After this period, it keeps a decreasing tendency. The amortization of deferred charges increase from 2009 to 2011 and 2012 to an13 and decrease in 2010 to 2011.

Chart 3.5 Common-size analysis of income statement (Total expense)



After some view of the component of total cost, we will have some discuss about expense. The item Research& Development is very small and we didn't take it into account. As for expenses, we can see from chart 3.5 that the main part is Sales, General & Administrative expense. In most fiscal year, the Sales, General & Administrative expense takes up almost 90% of total. Only in some fiscal year like 2010, the percentage has a rapid decrease for 20% and it is only 70% in total expense. This is caused by a big amount of increase in the amount of other operating expense. Mostly the percentage is less than 5%, but in 2010 the percentage become nearly 30%. The interest expense and research and development only take up a small amount in total.

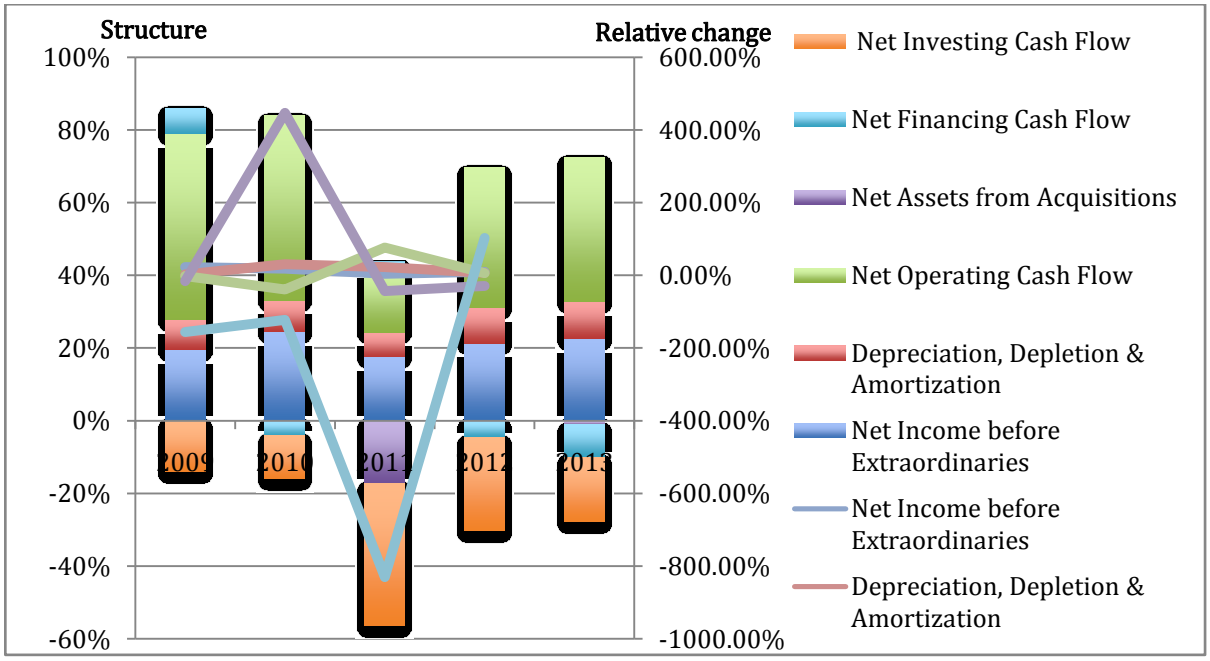
The other operating expense has decrease sharply from 2009 to 2011. Then it keeps increasing and the tendency keeps in the next years. The Sales, General & Administrative expense is steady and increase around 15% in each period. The interest expense also increases these periods.

3.3.3 Common-size analysis of Cash Flow

Cash flow shows the movement of money into or out of the company. It usually changes from one of three activities - financing, operations or investing. Cash flow is calculated by adding

non-cash charges to net income after taxes.Cash flow can be ascribing to a specific project, or to a business as a whole. It can be used as an indicator of a company's financial strength.

Chart 3.6 Common-size analyze of cash flow



From chart 3.6 we can see the cash flow in a company. We can see from the chart that most of cash in the company is inflow, the cash situation is positive, except for some fiscal year. In most situations the major part of cash inflow is net operating cash flow, which takes up 50% of cash flow. This means the company use a lot in operating. Another big form of cash inflow is depreciation, depletion and amortization. The biggest part of cash outflow is net investing cash flow. The company use more than 10% for investment. Situation is a little bit difference in 2011. The cash flow used for investing increased a lot and become more than 40%. These cause the negative situation in total cash flow. The operating cash flow only takes up 20%, which is two times less than last year. After 2011, the investing cash flow decreased to less than 30%, though higher than the amount of fiscal year 2009 and 2010, the total cash flow become positive.

For horizon analysis, we can see from the chart that from 2009 to 2011, most of the items increase and was positive in this period. Funds from operations are stable at this period. After 2011, most items decrease and funds from operations and other funds is below zero at that time. Deferred taxes and investment tax credit keep increasing and is over 100% by the end of 2013.

4. Analysis of Profitability and Liquidity of the selected company

In chapter 3 we know about the history and development of Tsingtao and analysis the financial structure. In this chapter we will analyze more specific problem. We will analyze the financial ratio and compare it with the main competitors in the industry.To more deeply analysis, we also calculate the profitability ratio and liquidity ratio and do pyramidal decomposition to see the influence factor.

4.1 Financial ratio analysis

In this part we calculate all kinds of the profitability and liquidity ratio and compare it with the main competitors and systemic see the financial situation of Tsingtao and see its position in the whole industry.

4.1.1 Profitability ratios

Profitability ratio can help us analyze the company's ability to generate profit from invested capital. It is the basis form for the survival and development of a company. Investors, creditors, or business executives all concern about corporate profitability. According to the formula (2.6), (2.7), (2.8) and (2.9) we can calculate the profitability ratio for China Resources Snow Brewery Company Limited (Snow) and Beijing Yanjing Brewery Company Limited (Yanjing).[1]

Table 4.1 Profitability ratio of Tsingtao Brewery Company

Indicators	**2009**	**2010**	**2011**	**2012**	**2013**
Operating profit margin	27.00%	24.71%	30.82%	29.46%	28.17%
Net profit margin	19.48%	17.77%	21.86%	20.98%	20.93%
Return on assets	11.67%	11.57%	11.05%	10.31%	9.56%
Return on equity	14.62%	15.22%	15.04%	13.59%	14.01%

[1] See the full ratio in Annex 4

Table 4.1 shows the profitability of Tsingtao Brewery Company. The highest operating profit margin happened in 2011 and it then decrease in 2012 and 2013. The best net profit margin also happened in 2011 and it is very stable. Return on asset has a decrease tendency and the highest of which is in 2009. The best return on equity happened in 2011, which is 15.22%. These ratios can show the financial situation of the company and we will compare it with main competitors in the brand.

Chart 4.1 Operating profit margin of Brewery industry

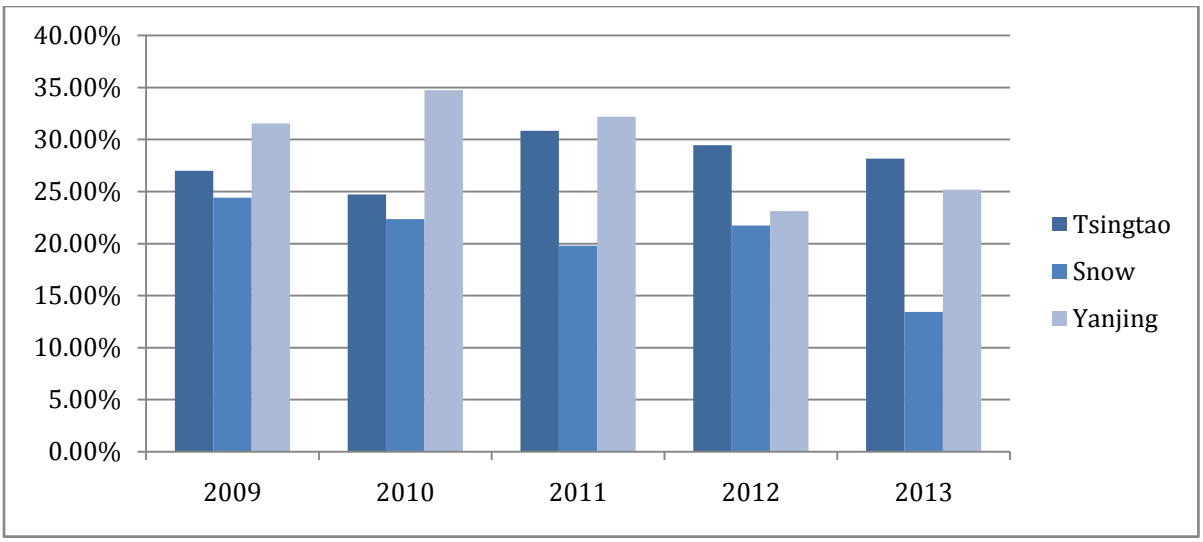
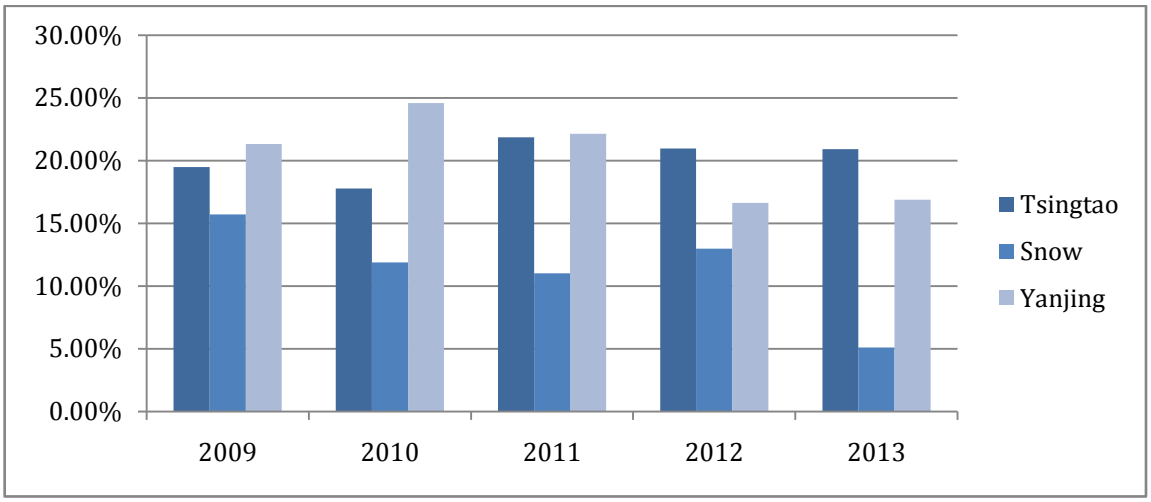


Chart 4.1 shows the comparison of operating profit margin of Tsingtao Brewery Company Limited (Tsingtao) China Resources Snow Brewery Company Limited (Snow) and Beijing Yanjing Brewery Company Limited (Yanjing). From the chart we can see in the fiscal year 2009 to 2010, Yanjing has the highestoperatingprofit margin. Tsingtao brewery is the second, which is around 5% to 10% lower than Yanjing. Snow is the lowest of all but only 5% lower than Tsingtao. Since 2011 Tsingtao has make some improvement and the percentage has increase and only less than 5% lower than Yanjing, From 2010 to 2013 Tsingtao has higher net profit margin than Yanjing. Snow has a sharp decrease in this ratio.

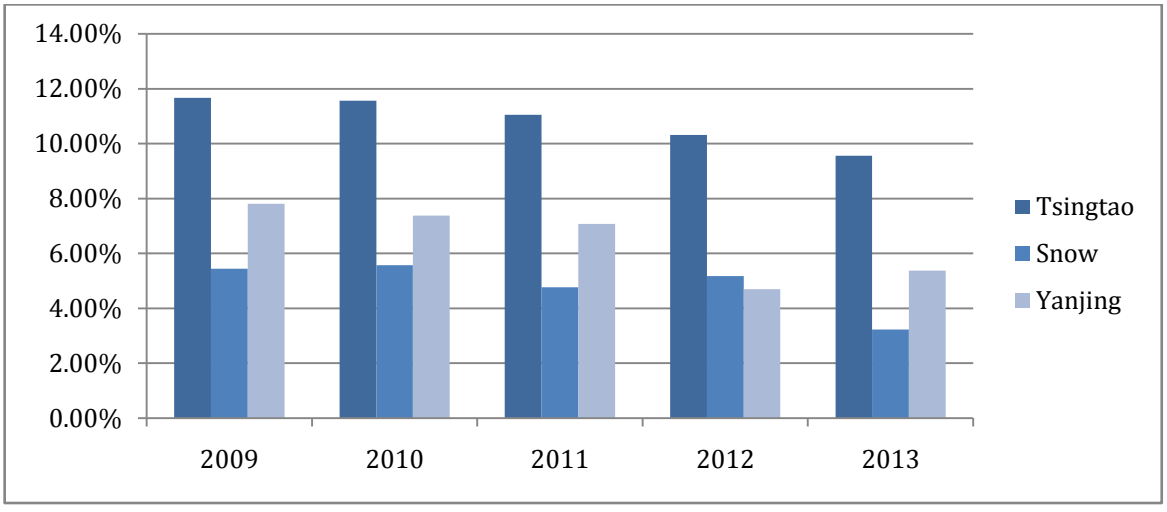
Though operating profit margin cannot be the same over year, but the condition is safer, it is better. We can see all three companies is not that stable but from 2009 to 2012 it change less than 5% and very stable. From 2009 to 2010 Yanjing is very stable. Tsingtao changed very flexible.

Chart 4.2 Net profit margin of Brewery industry



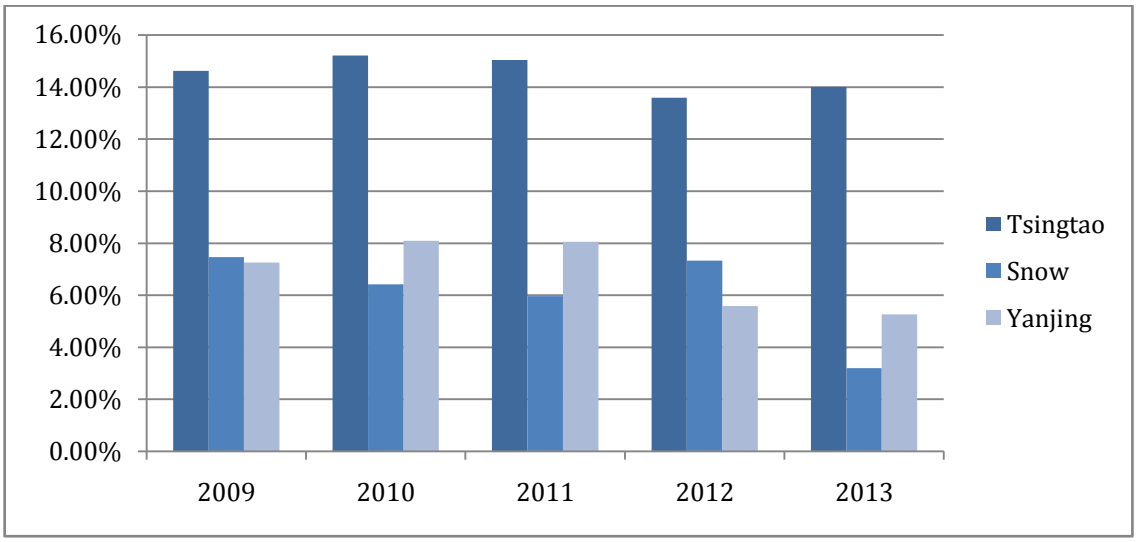
Net profit margin also has big difference. From 2009 to 2010 Yanjing has the best ratio than others and snow has the lowest percentage. Tsingtao is in the middle of them. In 2011 Tsingtao has some increase and become almost the same with Yanjing. Than it exceeded Yanjing from 2012 to 2013.Generally speaking, net profit margin of Tsingtao is very stable. It almost near 20% and have little change. Yanjing is also very stable but with a decrease tendency in 2010 to 2013. Because of the structure of management change in Yanjing after 2010, Yanjing have a decrease in net profit ratio.

Chart 4.3 Return on asset of Brewery industry



From chart 4.3 we can see Tsingtao have a big advantage over the others. From 2009 to 2011 Yanjing has better return on asset than Snow but in year 2012 and 2013 Snow has more return on asset than Yanjing. Tsingtao is also very stable in return on asset. Though there's a little bit decrease, it is around 10% and only fluctuated no more than 1% each year.

Chart 4.4 Return on equity of Brewery industry.



From the chart we can see all the companies has a positive return on equity. Tsingtao brewery also has clear advantage over other brand. It is 3% more than others. The percentage is very stable and has change less than 1%. Snow and Yanjing are very stable and didn't have much difference.

After comparing the different profitability, we can have a clear image of the financial situation of the brand. Tsingtao is almost the oldest brewery company in China and it has clear advantage on resource and other aspect, which makes the company, has clear advantage. From operating profit margin and net profit margin we can see that financial crisis still have some effect on the company's operating at the first two year and it then change to normal and become to the first on the brand again. Yanjing and Snow didn't have the centralized management system. They didn't have the marketing strategy. The Tsingtao is more stable and have a balance between production and sale.

4.1.2 Liquidity ratios

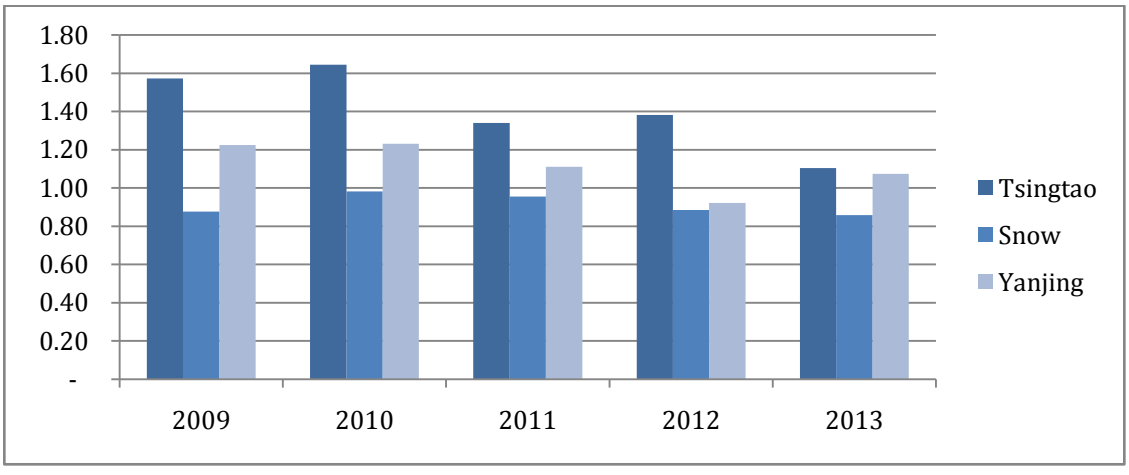
Liquidity ratio reflects a company's ability to repay short-term creditors out of its total cash. From chapter 2 we know the formula and can calculate the current ratio is (2.10) and (2.11) for quick ratio cash ratio. Also there will be some comparison to get better understanding of the company and the industry.We can calculate the liquidity ratio of China Resources Snow Brewery Company Limited (Snow) and Beijing Yanjing Brewery Company Limited (Yanjing) [2] and see the comparison.

Table 4.6 Liquidity ratio of Tsingtao Brewery Company

Indicators	2009	2010	2011	2012	2013
Current ratio	1.57	1.64	1.34	1.38	1.10
Quick ratio	1.18	1.32	0.96	1.06	0.88
Cash ratio	1.35	1.50	1.34	1.47	1.09

From the table we can see the highest current ratio happened in 2010, which is 1.64. There isn't much change in this ratio. The highest quick ratio happened also in 2010 and the lowest happened in 2013 as well. The highest cash ratio happened in 2010 and the lowest happened in 2013. The liquidity ratio is stable in these years. We can see that in 2010, the company in with the best liquidity, and 2013, the company is worst in liquidity. Then we will compare it to other companies in the brand.

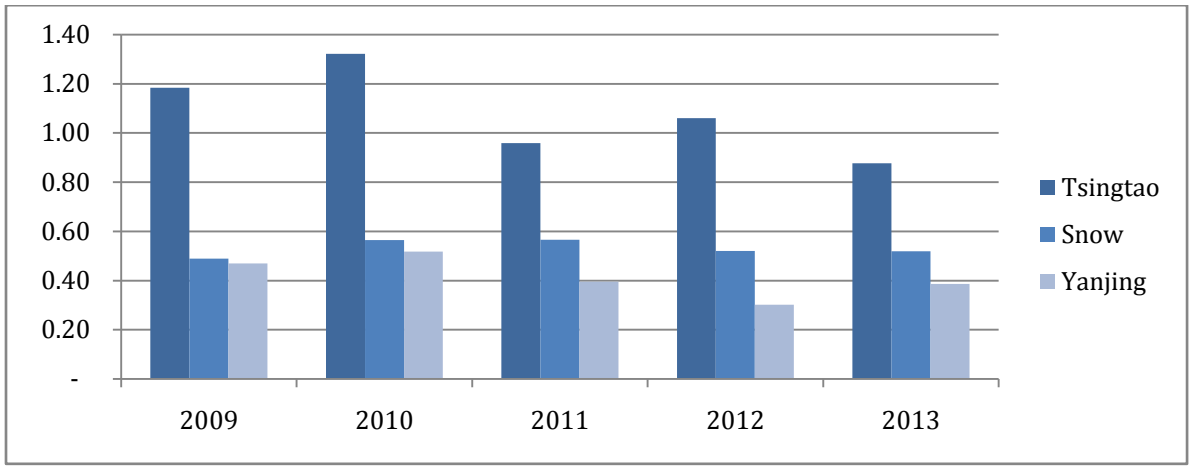
Chart 4.5 Current ratio of Brewery industry



[2] See full ratio on Annex 5

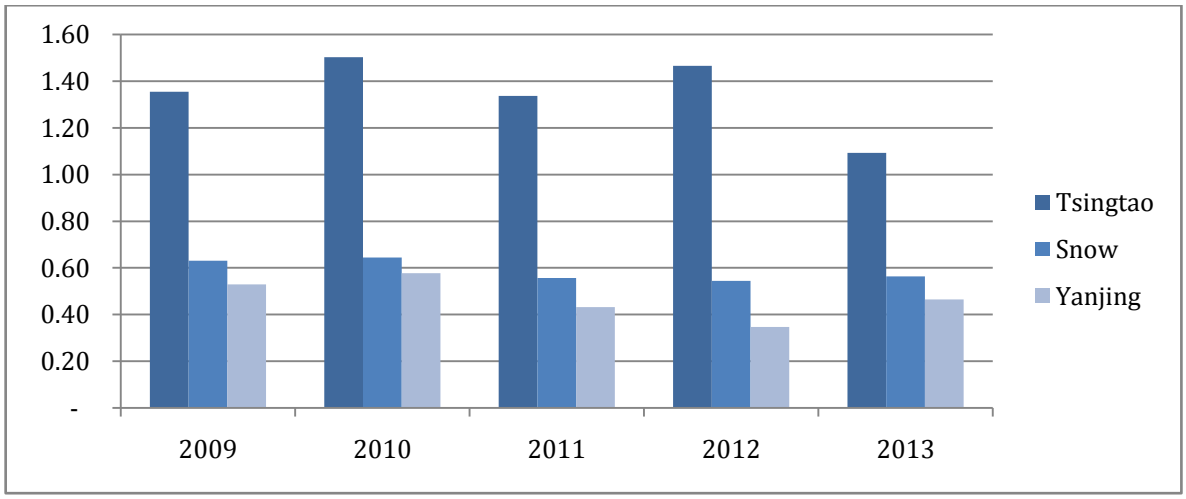
Chart 4.5 shows the current ratio of Brewery industry. Tsingtao also has clear advantage the others. It has 0.2 more over the others. Yanjing have more current ratio than Snow in all fiscal year. The most stable one is Snow. It has only a change in 0.2 over past 5 year. Yanjing had a decrease in 2012 about 0.2. It increased to 1.0 in 2013. Tsingtao flocculated from 1 to more than 1.6 in these 5 years.

Chart 4.6 Quick ratio of Brewery industry



Tsingtao brewery has the highest quick ratio among three companies. It had almost two times more than the others in 2009. The quantity various between 0.8 and 1.3. Snow has better result on quick ratio than Yanjing. The advantage of Tsingtao is quite oblivious in quick ratio. The quick ratio of snow and Yanjing fluctuated between 0.4 and 0.6. These two ratios are very stable and have less change in these periods.

Chart 4.7 Cash ratio of Brewery industry



The company Tsingtao has almost 2 times higher cash ratio than the other two competitors. From 2009 to 2012 the cash ratio of Tsingtao change from 1.2 to 1.4 and in 2013, it decrease to 1.1. Snow have better cash ratio than Yanjing. The cash ratio of Yanjing various from 0.5 to 0.6, which is really stable.Yanjing has the lowest cash ratio. It various between 0.4 to 0.6 in most fiscal year. In some fiscal year it decrease to 0.3.

After the comparison we can see that Tsingtao has the superiority of liquidity. All three liquidity ratio of Tsingtao is better than other companies. It has low risk when pay their debts and obligations.

From analysis the profitability ratio and liquidity ratio we can make a summary. Before 2011, Tsingtao had make positive profit and didn't reach the profitability that Yanjing does. After making some improvement and adjustment, it exceeds Yanjing then. The whole industry is in an increasing time from 2009 to 2015. After being the beer supplier of Beijing Olympic game and holding Qingdao International Beer Festival, Tsingtao brewery was known by more people. These help much with the selling of Tsingtao bear.

Tsingtao has significant advantage over Yanjing and Snow in all liquidity ratios. It always has positive result. However in 2013, the liquidity is decreased a big amount for itself. It needs to be

noticed and more attention needs to be paid to improve this situation. Decrease in liquidity is very dangerous which may result to bankruptcy. Liquidity must be kept in high level.

4.2 Pyramidal decomposition analysis

The pyramidal decomposition analysis is used to see which facts that may influence the profitability and liquidity of the chosen company. We will compare the change in every two-year and see in detail. It can help us see which part we can improve to have better financial situation of the company.

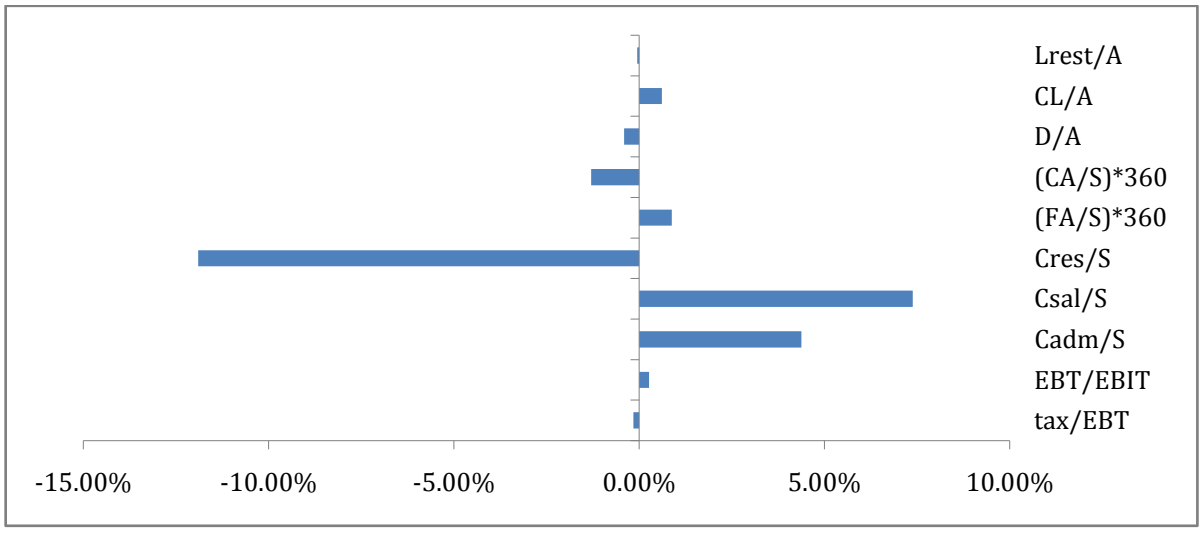
4.2.1 Pyramidal decomposition of profitability ratio ROE

From chapter 2 we've already known that decomposed ratio that can influence ROE are $\frac{TAX}{EBT}$, $\frac{Cadm}{S}$, $\frac{Csal}{S}$, $\frac{Cres}{S}$, $\frac{FA}{S}$, $\frac{CA}{S}$, $\frac{D}{A}$, $\frac{CL}{A}$ and $\frac{Lrest}{A}$.We can calculate the indicator of Tsingtao Brewery Company Limited from 2009 to 2013 by using formula (2.17) and (2.23) and rank them. First we choose the year 2009 to 2010 and calculate the result.

Table 4.7 Pyramidal decomposition-Logarithmic method of ROE from 2009 to 2010

Indicator	Influence	Influence (+,-)	Order
tax/EBT	-0.16%	-	7
EBT/EBIT	0.26%	+	5
Cadm/S	4.38%	+	2
Csal/S	7.38%	+	1
Cres/S	-11.90%	-	10
(FA/S)*360	0.88%	+	3
(CA/S)*360	-1.30%	-	9
D/A	-0.41%	-	8
CL/A	0.62%	+	4
Lrest/A	-0.05%	-	6
Σ	-0.29%		

Chart 4.8 Influence of pyramidal decomposition-Logarithmic method of ROE from 2009 to 2011



From the table 4.7 we can see the ROE decreased 0.29% from 2009 to 2010. Chart 4.8 shows it clearly the level that each item influences on ROE change. We can see that most of items are positive. Csal/S and Cadm/s increase ROE for a big number during this period. But this year the Cres/s has negative influence, which makes more than 11.9% decrease in ROE. This is the main reason thatmakes ROE decrease. From table 3.2 we can find that the rest of operating cost has a huge increase from 24 to 1691, increasing about seven times more than 2009.

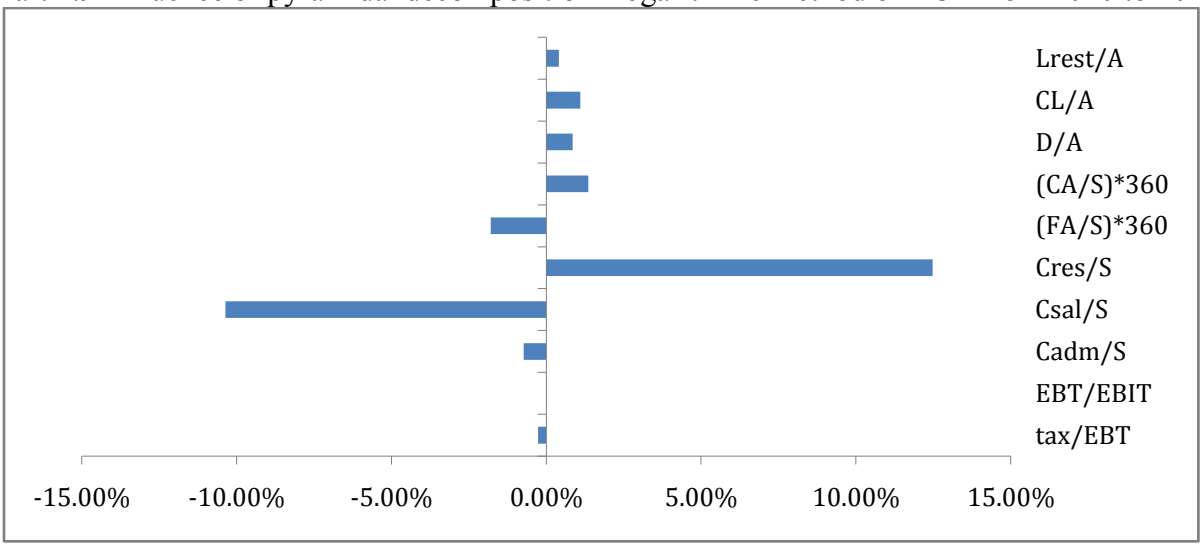
Another item that makes ROE decrease is CA/S. From the analysis before we've already known that Tsingtao is a company with high liquidity and hold more and more current assets than last year. But from 2009 to 2010, CA/S increased from 45.59% to 51.52%, which have some bad influence on ROE.

Table 4.8 Pyramidal decomposition-Logarithmic method of ROE from 2010 to 2011

Indicator	Influence	Influence (+,-)	Order
tax/EBT	-0.26%	-	7
EBT/EBIT	-0.01%	-	6
Cadm/S	-0.73%	-	8
Csal/S	-10.36%	-	10
Cres/S	12.48%	+	1
(FA/S)*360	-1.79%	-	9
(CA/S)*360	1.36%	+	2
D/A	0.86%	+	4

CL/A	1.10%	+	3
Lrest/A	0.40%	+	5
Σ	3.04%		

Chart 4.9 Influence of pyramidal decomposition-Logarithmic method of ROE from 2010 to 2011

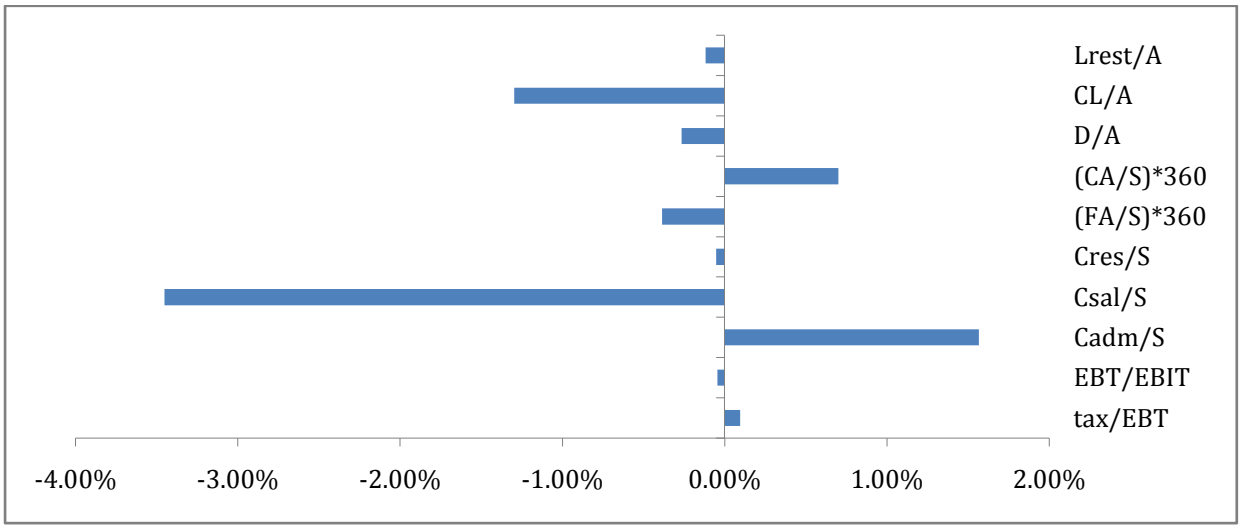


Then we will analyze the situation in 2010 to 2011. We can see that comparing to last fiscal period, Tsingtao make many improvements in controlling the rest of operating cost and current assets. From table 3.2 we can see rest of operating cost decrease from 1691 to 14 and makes ROE increased 12.48%. Tsingtao also decreases the CA/S to 45.57% and makes this item positive to ROE. However in this year, as the revenue increase, cost of sell increase. It increased from 13016 to 16378 and makes 10.36% decrease in ROE. Tsingtao ‘s fixed asset increased from 9661 to 16835, increasing 74.2% and makes 1.79% decrease in ROE.

Table 4.9 Pyramidal decomposition-Logarithmic method of ROE from 2011 to 2012

Indicator	Influence	Influence (+,-)	Order
tax/EBT	0.10%	+	3
EBT/EBIT	-0.04%	-	4
Cadm/S	1.57%	+	1
Csal/S	-3.45%	-	10
Cres/S	-0.05%	-	5
(FA/S)*360	-0.39%	-	8
(CA/S)*360	0.70%	+	2
D/A	-0.27%	-	7
CL/A	-1.30%	-	9
Lrest/A	-0.12%	-	6
Σ	-3.25%		

Chart 4.10 Influence of pyramidal decomposition of ROE from 2011 to 2012

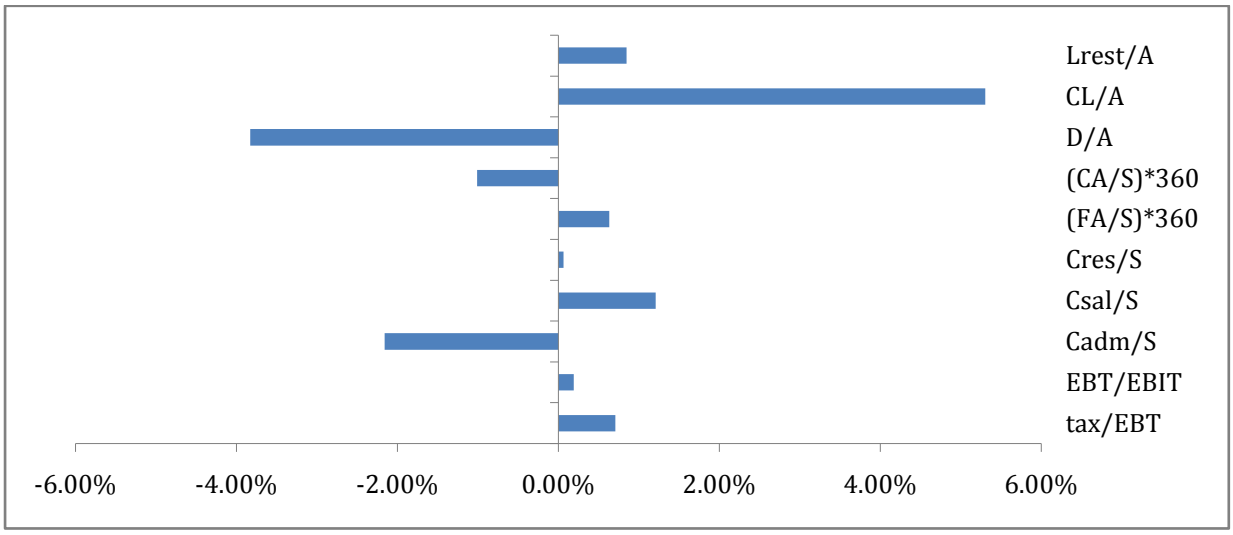


In this period, Cost of sale kept the increasing tendency and increase to 19286 this year. The bad tendency cause 3.45% decrease this year. Most of items were decreased in this period. Current liability increased from 8830 to 9126, which had a decrease tendency in CL/A and decrease total ROE for 1.3%. Most of items decrease in this period, which cause a negative decreased tendency in ROE.Administrative cost increase from 6389 to 6975, which is very stable and contribute 1.57% to total ROE.

Table 4.10 Pyramidal decomposition-Logarithmic method of ROE from 2012 to 2013

Indicator	Influence	Influence (+,-)	Order
tax/EBT	0.71%	+	4
EBT/EBIT	0.19%	+	6
Cadm/S	-2.16%	-	9
Csal/S	1.21%	+	2
Cres/S	0.07%	+	7
(FA/S)*360	0.63%	+	5
(CA/S)*360	-1.01%	-	8
D/A	-3.83%	-	10
CL/A	5.30%	+	1
Lrest/A	0.85%	+	3
Σ	1.96%		

Chart 4.11 Influence of pyramidal decomposition of ROE from 2012 to 2013



From 2012 to 2013, Tsingtao made improvements in last years worst item Csal/S. Cost of sale increased from 19,246 to 21,568 but Csal/S decreased from 65.12% to 65.44% and this year the influence of Csal/S in 1.21%. In this period CL/A increased from 37.89% to 51.18% and this item increase ROE for 5.3%. Long-term debt this year sharply decreased from 2,316 to 6 and make ROE decrease for 3.83%. CA/S also decrease ROE for 1.01% because current asset change from 12,617 to 15,721

To see the results of these years more clearly, we make a table of the influence in all these periods. Also, we calculate the total influence and the share that each indicatortakes up in total influence[3].

[3]The calculating procedure is

1. $Total\ influence\ of\ a_i = \sqrt{\sum_t \Delta x_{ai}^{\ 2}}$ 2. $Total\ influence\ \sum a_i = \sum Total\ influence\ of\ a_i$

3. $Share\ of\ indicator = \frac{Total\ influence\ of\ a_i}{Total\ influence}$。

Table 4.11 Summary in the influence of ROE from 2009 to 2013.

Indicator	Influence				Total influence	Share	Order
	09 to 10	10 to 11	11 to 12	12 to 13			
tax/EBT	-0.159%	-0.265%	0.095%	0.708%	0.778%	1.506%	9
EBT/EBIT	0.265%	-0.009%	-0.045%	0.189%	0.328%	0.636%	10
Cadm/S	4.379%	-0.729%	1.566%	-2.158%	5.179%	10.027%	4
Csal/S	7.383%	-10.364%	-3.452%	1.209%	13.241%	25.637%	2
Cres/S	-11.897%	12.479%	-0.052%	0.066%	17.241%	33.383%	1
(FA/S)*360	0.877%	-1.792%	-0.385%	0.632%	2.128%	4.120%	7
(CA/S)*360	-1.297%	1.363%	0.701%	-1.009%	2.247%	4.351%	6
D/A	-0.407%	0.856%	-0.265%	-3.830%	3.954%	7.656%	5
CL/A	0.616%	1.099%	-1.297%	5.305%	5.605%	10.852%	3
Lrest/A	-0.049%	0.404%	-0.117%	0.846%	0.946%	1.832%	8
Σ					51.647%	100.00%	

From table 4.11 we can see the influence of these indicators. We calculate the total influence of each indicator and all these indicators cause 51.647% in ROE. The total influence is mainly making up of Cres/S and Csal/S. These two indicators take up more than 60% of total influence in ROE. The Cres/S from 2009 to 2010 is around 10% below 0. In 2010 to 2011, it is 10% over zero. The Csal/S is 10% above zero. The situation is opposite for Csal/S. Another two big influence factor is CL/A and Cadm/S. They all take up more than 10% in total influence. The EBT/EBIT and Tax/EBT have little influence on ROE.

In order to get better understanding of the influence of each indicators will have, we choose Debt, Cadm and CA to do the sensitive analysis. We increase or decrease these indicator in a stationary percentage and see the influence these indicator will make.

Table 4.12 Sensitive analysis of influence pyramidal decomposition ROE

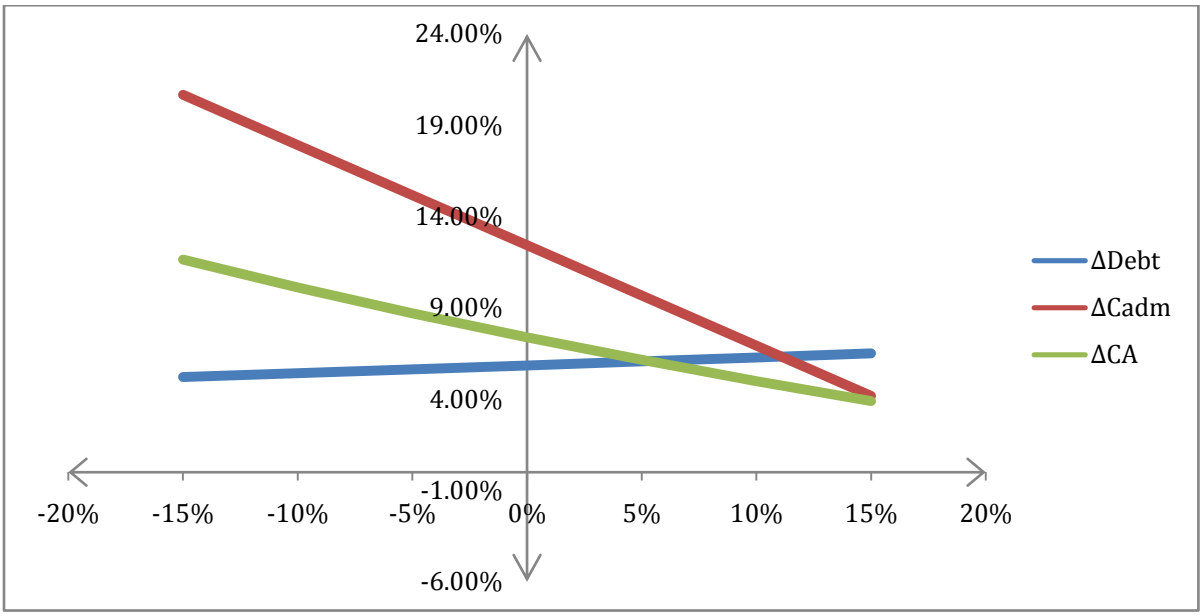
Change (%)	ΔDebt	ΔROE	ΔCadm	ΔROE	ΔCA	ΔROE
15%	347.4	6.50%	1048.35	4.18%	1892.55	3.90%
10%	231.6	6.28%	698.9	6.92%	1261.7	4.99%
5%	115.8	6.06%	349.45	9.67%	630.85	6.15%
0	0	5.84%	0	12.42%	0	7.38%
-5%	-115.8	5.63%	-349.45	15.16%	-630.85	8.70%
-10%	-231.6	5.42%	-698.9	17.91%	-1261.7	10.11%
-15%	-347.4	5.21%	-1048.35	20.66%	-1892.55	11.63%

From the table 3.2 we can see that debt decrease sharply from 2316 to 6 and make big loss on ΔROE. We can make some improvement on this item. First let us assume that in 2013, the debt didn't change with the data in 2012, which means the Debt is still 2316. We can find from the chart that if the change of debt is 0% compare to 2012, it will still decrease ΔROE for 0.51% and the ΔROE will be 5.84%,which is 3.88% more than the actual ΔROE in 2013. Further more, if we increase 5% debt than it does in 2012, the ROE will be 6.06%, which is 0.22% than 0% change in debt and is 4.1% more than real ROE in 2013. We can also find the result if we increase more in debt. On the contrary, if we decrease debt than it was in 2012, the ROE will be 5.63%. It is 3.67% more than real ROE in 2013 but 0.21% less than no change in debt in 2012.

We also have the same analysis with administrative cost. Administrative cost increase from 6,989 to 8,320 and have 2.16% decrease in ROE. We assume that the administrative cost in 2013 keep the same with it does in 2012. Through calculation, we get that the Cadm/S will increase 4.93% on ROE. Because administrative cost change also has influence on other items, the final change is more than 4.93%. We can find in the chart that the ROE will be 12.42%, which is 10.46% more than real ROE in 2013. If we decrease administrative cost for 5% than 2012, the ROE will be 15.16%, which increased 2.74% than not any change in 2012. It increases 13.20% than real 2013. If we increase administrative cost for 5%, the ROE will be 9.67%. It is 7.71% more than real ROE in 2013 but decrease 2.75% than the stable in 2012.

Then we did the same to current asset. It is possible for the company to control the current asset. The current asset increased from 12,617 to 15,721 and make 1.01% in ROE. If we keep the current asset stable in 12,617 and the ROE will be 7.38%. It is 5.42% more than the real ROE in 2013. If we decrease the amount for 5%, the ROE will increase 1.32% then it does before the increase. If we increase the amount for 5%, the ROE will be 6.15% with a decreasing of 1.23%.

Chart 4.12 Adjustment of Decomposed Items of ROE



From the data in table 4.11, we can get chart 4.2, which is more readable. We can see thatΔDebt, ΔCadm and ΔCA are liner. ΔCadm and ΔCA have a decrease tendency, which means in order to increase ΔROE, the company should decrease the administrative cost and current liability. ΔDebt is an increasing, which means we need to increase long-term debt to increase ΔROE.

4.2.1 Pyramidal decomposition of liquidity ratio Current Ratio

In this chapter we will do the pyramidal decomposition to the liquidity ratio, Current ratio. First we use the methodology in chapter 2 to do the decomposition to the current ratio. We know from the formula (2.10) that

$$Current\ Ratio = \frac{CA}{CL} \tag{2.10}$$

Based on this, we do the further decomposition. From the balance sheet statement we know that

$$CA = C\&S + TAR + Inv. + OCA \tag{4.1}$$

Where CA is current asset, C&S is Cash &short-term investments, TAR is Total Account Receivable, Inv. Is Inventories and OCA is Other Current Asset.

And

$$C\&S = Cash + SI \tag{4.2}$$

$$TAR = NAT + OR \tag{4.3}$$

$$Inv. = FG + WP + Mar. + PP \tag{4.4}$$

$$OCA = PE + MAC \tag{4.5}$$

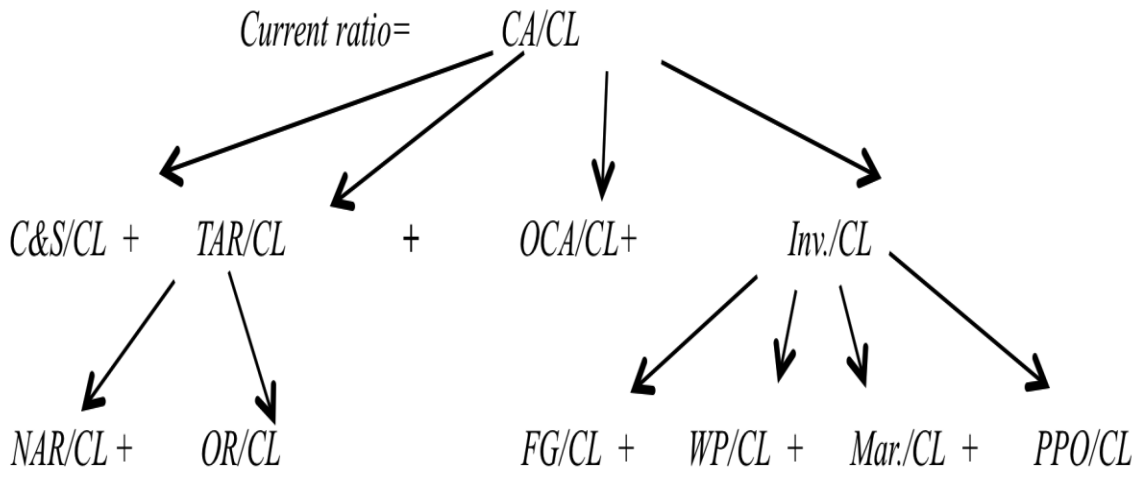
After calculation, we know that

$$CR = \frac{(Cash + SI) + (NAT + OR) + (FG + WP + Mar. + PP) + (PE + MAC)}{CL} \tag{4.6}$$

Where SI is Short-term investments, NAT is Net Account Receivable, OR is Other Receivable, FG is Finished Goods, WP is Work in Progress, Mar. is Materials, PP is Progress payment, PE is Prepaid Expenses and MAC is Miscellaneous Current Assets.

Because in both five years, the short-term invest and Miscellaneous Current Assets of company is zero, we skip the decomposition of cash& short-term investments and other current assets. As a result, we get the decomposition of current ratio as

Chart 4.13 Decomposition of Current Ratio.

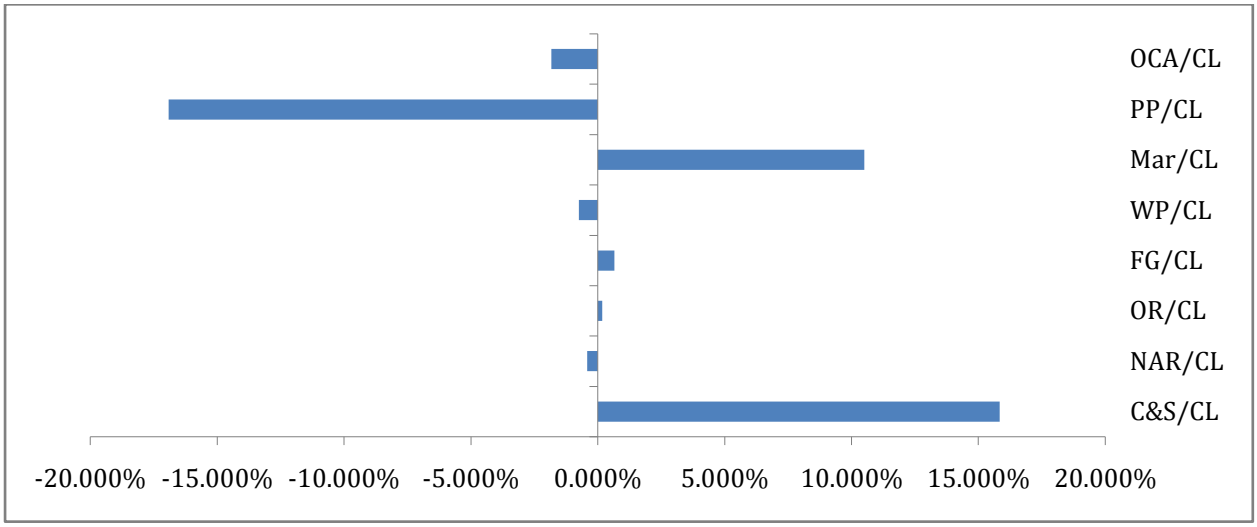


From chart 4.13 we know that the influence factors of current ratio are C&S, NAR, OR, FG, WP, Mar, PPO and OCA. From the calculation, we can know the result of each year and do the analysis. First we can do the analysis of 2009 and 2010.

Table 4.13 Pyramidal decomposition of current ratio from 2009 to 2010

Indicator	Influence	Influence (+,-)	Order
C&S/CL	15.842%	+	1
NAR/CL	-0.422%	-	5
OR/CL	0.180%	+	4
FG/CL	0.653%	+	3
WP/CL	-0.738%	-	6
Mar/CL	10.507%	+	2
PP/CL	-16.908%	-	8
OCA/CL	-1.82899%	-	7
Σ	7.285%		

Chart 4.14 Influence of pyramidal decomposition of Current Ratio from 2009 to 2010



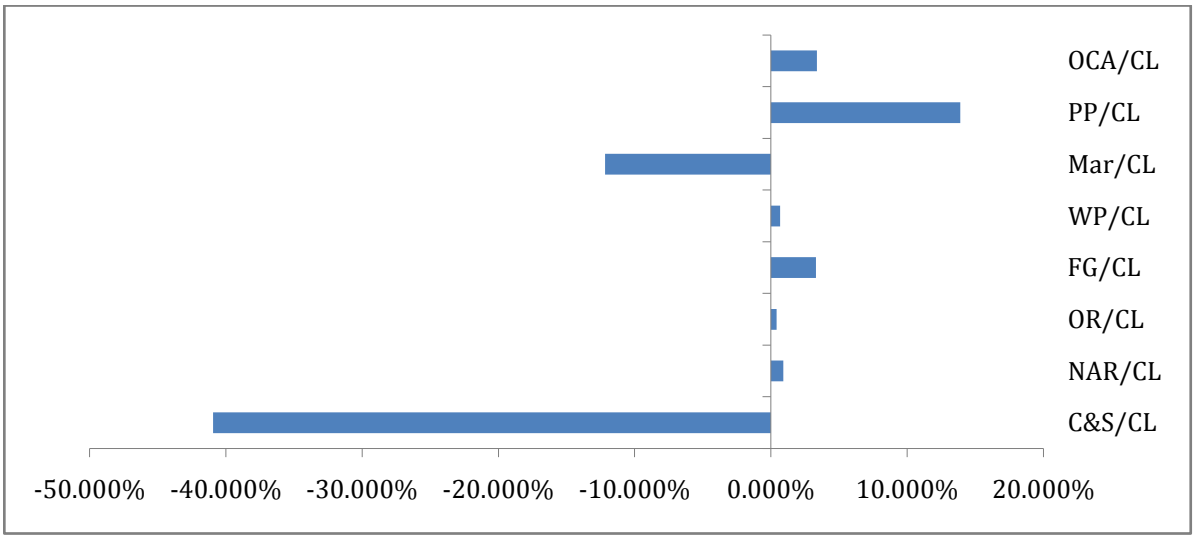
From the financial year 2009 to 2010, the influence of current ratio is positive. The C&SC/L make the most positive influence on the ratio, which increase the ratio for 15%. Mar./CL also has positive influence on total ratio. The item PP/CL in inventory cause most loss in the ratio. It is because the influence of financial crisis still exists in this year and the company has to spend a

large number in payment of last years. Another decreasing factor of the ratio is OCA/CL. It decrease CR for less than 5%. Other items only make small influence on CR.

Table 4.14 Pyramidal decomposition of current ratio from 2010 to 2011

Indicator	Influence	Influence (+,-)	Order
C&S/CL	-40.936%	-	8
NAR/CL	0.900%	+	4
OR/CL	0.414%	+	6
FG/CL	3.298%	+	3
WP/CL	0.676%	+	5
Mar/CL	-12.160%	-	7
PP/CL	13.889%	+	1
OCA/CL	3.38539%	+	2
Σ	-30.53%		

Chart 4.15 Influence of pyramidal decomposition of Current Ratio from 2010 to 2011



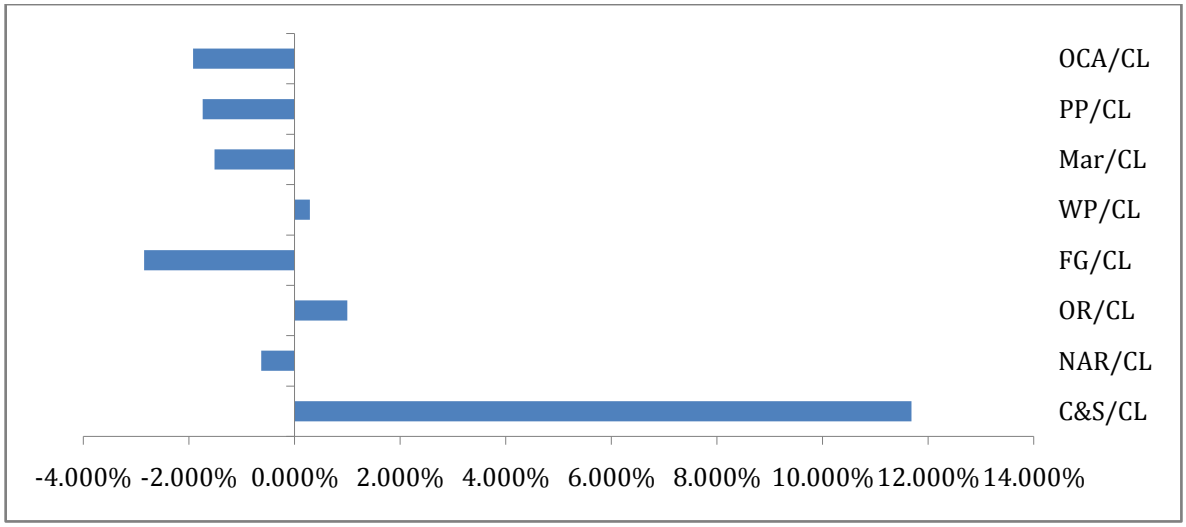
From the year 2010 to 2011 we can see that the company realize the problem in progress payment and spend less in this part, which makes PP/L increase more than 10%. However, there is a big decrease in cash and short-term investment, which makes C&S/CL cause 40% decrease of current ratio.In 2010, Tsingtao expand the company and start to target on upscale market and may have much cash outflow, which cause a large decrease in current ratio. The

company also holds less material because the quantity increases in production, which cause a 10% decrease in ratio.

Table 4.15Influence of pyramidal decomposition of Current Ratio from 2011 to 2012

Indicator	Influence	Influence (+,-)	Order
C&S/CL	11.685%	+	1
NAR/CL	-0.632%	—	4
OR/CL	1.002%	+	2
FG/CL	-2.850%	-	8
WP/CL	0.294%	+	3
Mar/CL	-1.515%	-	5
PP/CL	-1.742%	-	6
OCA/CL	-1.91877%	-	7
Σ	4.324%		

Chart 4.16 Influence of pyramidal decomposition of Current Ratio from 2011 to 2012



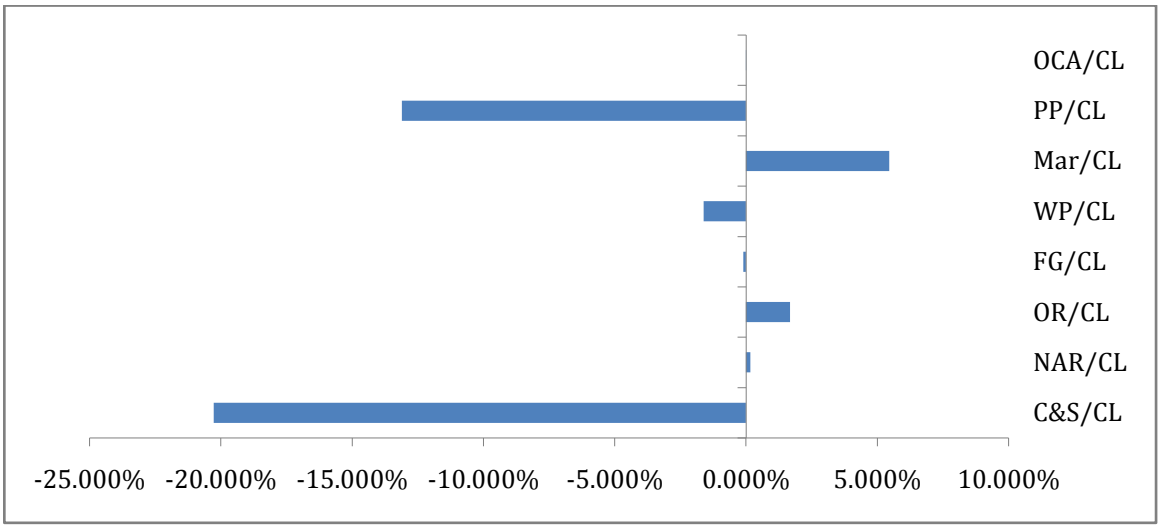
From 2011 to 2012, most of the items in currentratio have a decrease tendency. TheFG/CL cause a big decrease, which is around 2%. The expansion of company make the company helps company increase a lot in cash and C&S/CL have more than 10% increase and other receivables. There's a big decrease in inventories, which includes finished goods, work in progress, materials

and progress payment. Except for WP/CL, which have small increase, each item decrease for 2%. The liquidity is positive and better than last period.

Table 4.16Influence of pyramidal decomposition of Current Ratio from 2012 to 2013

Indicator	Influence	Influence (+,-)	Order
C&S/CL	-20.275%	-	8
NAR/CL	0.163%	+	3
OR/CL	1.673%	+	2
FG/CL	-0.104%	-	5
WP/CL	-1.614%	-	6
Mar/CL	5.456%	+	1
PP/CL	-13.105%	-	7
OCA/CL	-0.00123%	-	4
Σ	-27.807%		

Chart 4.17 Influence of pyramidal decomposition of Current Ratio from 2012 to 2013



From year 2012 to 2013, we can see the influence is negative. The cash and short-term investment decrease for a big amount, which cause C&S decrease for more than 20%. The PP/CL also decreases for 13%. In this period Tsingtao build a new program with another company and cause a big amount in cash outflow. The PP/CL also have a decrease tendency for more than 10%.

The increasing factors are materiel and other receivables. In order to see the influence clearly, we make a little summary of the order of each indicator.

Table 4.17 Summary in the influence of CR from 2009 to 2013.

Indicator	Influence				Total influence	Share	Order
	09 to 10	10 to 11	11 to 12	12 to 13			
C&S/CL	15.842%	-40.936%	11.685%	-20.275%	49.743%	46.853%	1
NAR/CL	-0.422%	0.900%	-0.632%	0.163%	1.189%	1.120%	8
OR/CL	0.180%	0.414%	1.002%	1.673%	2.002%	1.886%	6
FG/CL	0.653%	3.298%	-2.850%	-0.104%	4.409%	4.153%	4
WP/CL	-0.738%	0.676%	0.294%	-1.614%	1.922%	1.810%	7
Mar/CL	10.507%	-12.160%	-1.515%	5.456%	17.039%	16.049%	3
PP/CL	-16.908%	13.889%	-1.742%	-13.105%	25.565%	24.080%	2
OCA/CL	-1.829%	3.385%	-1.919%	-0.001%	4.300%	4.050%	5
Σ					106.168%	100.000%	

In summary, we put the influence of each factor together. Then calculate the influence of these indicators and the share that each indicator takes up in total influence.[4]

The factor that has biggest part of total influence is C&S. It takes up almost half of the total influence. It is very unstable. From 2009 to 2010 and 2012 to 2013, it increase more than 15% from 09 to 10 and decrease 40% from 2010 to 2011. It decreases ROE for 20% from 2012 to 2013. It is also the biggest influence factor in most years. PP/CL is also a big part of total influence. It have 24% in total influences. NAR/CL and WP/CL have the least share in total influence.

Table 4.18 Sensitive analysis of influence pyramidal decomposition Current ratio

Change(%)	ΔWP / CL	ΔCR	ΔPP/CL	ΔCR	ΔOCT/CL	ΔCR
15%	69.6	-27.53%	-19.15970899	-18.14%	1892.55	-28.46%
10%	46.4	-27.69%	-12.8487667	-18.56%	1261.7	-28.54%
5%	23.2	-27.85%	-6.462197034	-18.98%	630.85	-28.63%
0	0	-28.02%	0	-19.40%	0	-28.71%
-5%	-23.2	-28.18%	6.537824405	-19.82%	-630.85	-28.78%
-10%	-46.4	-28.34%	13.15127618	-20.24%	-1261.7	-28.87%
-15%	-69.6	-28.51%	19.84035533	-20.66%	-1892.55	-28.94%

[4] The calculating procedure is the same as 3.

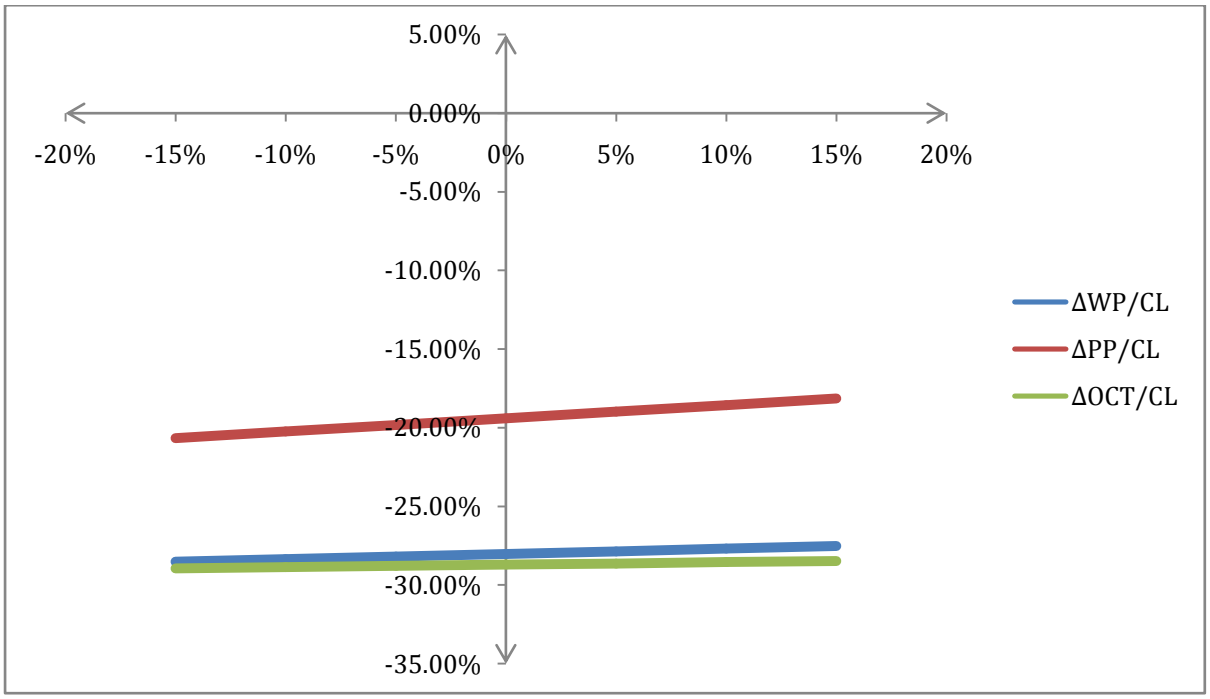
From the table 3.1 we can know that the WP/CL of 2012 is 464 and the WP/CL of 2013 is 494. WP/CL make a 1.614% decrease in total ΔCR. First we assume that the WP/CL in 2013 is the same as 2012, which is also 464. We can see that the ΔCR is -28.2%. Then we increase the WP for 5%. TheΔCR will be 0.17% higher than before. If we decrease WP for 5%, the CR will decrease and will be 28.18%.

For PP/CL, we can see from the table 3.1 that the PP/CL in 2012 is 1196 and in 2013, it becomes 0. It makes the CR decrease for more than 13%. So we assume if PP/CL can keep in the same level of 2012 in 2013. We can see that the CR will be 19.4%, which increase for 8% than real ΔCR. If we increase PP/CL for 5%. The CR will increase as well. It will increase for 0.420%.

OCT/CL in 2012 is 229 and in 2013, it increases to 357. As the ways we do before, we first assume that the OCT/CL in 2013 is the same as it was in 2012. The ΔCR is -28.71%, which is 0.899% lower than real CR. If we increase it for 5%, the ΔCR will increase to 29.71% and if we decrease OCT for 5%, the ΔCR will be lower and will be 28.78%.

From the chart we can know that the relationship between these index and ΔCR is linear. We can get the chart below.

Chart 4.18 Adjustment of Decomposed Items ofCurrent ratio



From chart 4.18 we can see that the relationship between the influence index and ΔCR. We can see that both of 3 indexes have a linear with increasing tendency. With these index grows, the ΔCR will become higher. It means that if the company wants to improve its current ratio, it needs to increase the number of these indexes.

Tsingtao is a company with high liquidity. The unstable factors in current ratio are cash &short-term investment, progress payment and material. In the future the company should try to make change in these factors and make better progress.

From the decomposition of liquidity ratio we can see that Tsingtao is a company with good development. And it can make quick reflect to the items to the bad influence and change policies in time to control them to make better profit. Tsingtao also do many things like expand the production, have more target market and corporate with other companies to improve the financial situation.

4.3 Summary of analysis

In this chapter we calculate the financial ratio of Tsingtao and compare it with China Resources Snow Brewery Company Limited and Beijing Yanjing Brewery Company Limited and decompose the ROE and current ratio. From these analyses we can see that Tsingtao have huge advantages in liquidity. It has the highest current ratio, cash ratio and quick ratio among its competitors. About its profitability, the operating profit margin and net profit margin from 2009 to 2011 didn't appear to show its superiority over the others but in 2012, these ratios exceed its competitors and keep the advantage in 2013. From this we know that Tsingtao's profitability and liquidity is very high and have advantage over the others. It can make quick reflect to its disadvantage and change the situation.

After doing the decomposition of ROE, we can see that the influence factor that increases ROE in average in these years is CL/A and Lrest/A. The factor that will decrease the ROE is D/A and FA/S. To get better ROE, the company should decrease their debt and Cadm and increase its CA.

In these fiscal years Tsingtao is increasing its form for better development, which makes a decrease in inventory and cash and increase in spending, which cause a unstable in CR. The factor that will increase CR in average is OR/CL and Mar/CL. PP/CL, WP/CL and OCA/CL decrease CR in most of the years. To increase the CR, the company should increase its WP/CL, PP/CL and OCT/CL.

5. Conclusion

In the thesis we analyze the balance sheet, income statement and cash flow of Tsingtao brewery limited from 2009 to 2013 and then evaluate its profitability and liquidity. We make fully analysis of Tsingtao. Though some part of index is loss in some fiscal year, we can see that the financial situation of Tsingtao is good.

The financial structure of company is without problem. The quality of profit in company is stable and high. The cost is well controlled and the profit is well guaranteed. By evaluate the ratio base on revenue, liability and asset we can see the great progress of company. We can see the potential of development of Tsingtao. The effective control in costs of product makes company have good increase in revenue. In the future the company can expand the advantage in this part and increase profit.

The profitability of Tsingtao is very effective in these years. The profit grows fast. The main reason for the slow increase rate is because the increasing competition among industry. The influence of financial crises still exists in the first 3 years and the situation in all industry is hard. Tsingtao still makes much profit in these years.

The liquidity of Tsingtao has obvious advantage among competitors. Burt the company should still make more concern on controlling the amount of cash and short-term investment to get better results.

By analyze the whole situation of company we can see that the strategy of company is successful. The company can make up for the shortcomings on time but still need some work on keeping the advantage. The increasing of company is steady. After so many year of development the financial strategy is mature.

Generally speaking, in the future the competitive is getting more and more intense. The company should keep their advantage in profitability and liquidity and try to make progress. From the unsteady tendency in the influence factor we can see that the company is influenced by the industry. In future the company should keep the increasing tendency and improve the problem and increase the management and control to get a high profit. We believe in future Tsingtao will have better development.

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List of Abbreviations

COGS: Cost of Goods Sold

ROE: Return on Equity

ROA: Return on Assets

EAT: Earning After Tax

S: Sales

A: Total Assets

E: Common Shareholder's Equity

Cop: Operating Costs

Cadm: Administrative Costs

Csal: Cost of Sales,

Cres: Rest of Operating Costs

I: Interests

EBIT: Earning before Interest and Tax

EBT: Earning before Tax

CR: Current Ratio

CA: Total Current Asset

FA: Total Fixed Assets

CA: Total Current Assets

L: Total Liabilities

D: Total Long-Term Debt

CL: Total Current Liabilities

Lrest: Rest of Liabilities

C&S: Cash &short-term investments

TAR: Total Account Receivable

Inv.: Inventories

OCA: Other Current Asset

SI: Short-term investments

NAT: Net Account Receivable

OR: Other Receivable

FG: Finished Goods

WP: Work in Progress

Mar.: Materials

PP: Progress Payment

PE: Prepaid Expenses

MAC: Miscellaneous Current Assets

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Ostrava dated 6.5.2015

徐宙 YIN XU

Student's name and surname

List of Annex

Annex 1 Balance sheet of Tsingtao Brewery Limited from 2009 to 2013

	2009	2010	2011	2012	2013
ASSETS					
Cash & Short Term Investments	**6,077**	**8,963**	**7,537**	**8,856**	**10,927**
Cash Only	6,077	8,963	7,537	8,856	10,927
Short-Term Investments	0	-	0	0	0
Total Accounts Receivable	**280**	**344**	**545**	**596**	**1,190**
Accounts Receivables, Net	117	121	230	180	304
Accounts Receivables, Gross	488	517	638	572	562
Bad Debt/Doubtful Accounts	-371	-397	-408	-392	-259
Other Receivables	163	223	314	416	887
Inventories	**2,132**	**2,291**	**3,354**	**2,936**	**3,246**
Finished Goods	230	343	718	482	737
Work in Progress	267	292	423	464	494
Raw Materials	653	1,588	902	794	2,015
Progress Payments & Other	983	68	1,311	1,196	0
Other Current Assets	**158**	**74**	**391**	**230**	**357**
Prepaid Expenses	158	74	388	227	352
Miscellaneous Current Assets	0	0	3	2	5
Total Current Assets	**8,648**	**11,672**	**11,826**	**12,617**	**15,721**
Net Property, Plant & Equipment	6,388	6,835	9,661	11,468	12,090
Total Investments and Advances	174	181	188	213	1,680
Long-Term Note Receivable	2	2	-	-	-
Intangible Assets	1,375	1,701	4,270	4,514	4,627
Other Assets	26	189	267	20	34
Non-current Asset	**8,238**	**9,299**	**14,870**	**16,819**	**19,328**
Total Assets	**16,886**	**20,971**	**26,696**	**29,436**	**35,049**
Liabilities & Shareholders' Equity					
ST Debt & Current Portion LT Debt	309	336	307	288	2,608
Short Term Debt	276	315	304	286	307
Current Portion of Long Term Debt	32	21	3	2	2,302
Accounts Payable	1,201	1,489	2,051	2,480	3,467

Income Tax Payable	242	276	328	125	195
Other Current Liabilities	3,751	4,995	6,144	6,234	7,964
Dividends Payable	-	11	1	1	1
Accrued Payroll	595	766	935	1,103	995
Miscellaneous Current Liabilities	3,155	4,218	5,208	5,130	6,967
Total Current Liabilities	5,502	7,097	8,830	9,126	14,234
Long-Term Debt	1,397	1,505	2,207	2,316	6
Long-Term Debt excl. Capitalized	1,394	1,505	2,207	2,316	6
Non-Convertible Debt	1,394	13	2,207	2,316	6
Convertible Debt	-	1,492	0	0	0
Capitalized Lease Obligations	3	1	0	0	0
Provision for Risks & Charges	-	-	-	-	624
Deferred Taxes	-235	-355	-226	-382	-674
Deferred Taxes - Credit	39	37	259	222	223
Deferred Taxes - Debit	274	392	484	604	897
Other Liabilities	13	1	1	0	0
Deferred Tax Liability-Untaxed	-	0	0	0	0
Other Liabilities (excl. Deferred	13	1	1	0	0
Deferred Income	-	0	0	0	0
Total Liabilities	6,951	8,640	11,298	11,665	15,087
Non-Equity Reserves	209	865	1,483	1,868	2,192
Preferred Stock (Carrying Value)	0	0	0	0	0
Redeemable Preferred Stock	0	0	0	0	0
Non-Redeemable Preferred Stock	0	0	0	0	0
Common Equity (Total)	9,337	11,328	13,710	15,511	17,957
Common Stock Par/Carry Value	1,534	1,594	1,667	1,681	1,730
Additional Paid-In Capital/Capital	4,657	4,625	4,837	4,812	5,113
Retained Earnings	2,334	4,173	6,066	7,719	9,613
ESOP Debt Guarantee	0	0	0	0	0
Cumulative Translation	7	7	21	24	33
Unrealized Gain/Loss Marketable	0	0	0	0	0
Revaluation Reserves	0	0	0	0	-
Other Appropriated Reserves	804	930	1,119	1,276	1,468
Unappropriated Reserves	-	0	-	-	-
Treasury Stock	0	0	0	0	0

Total Shareholders' Equity	9,337	11,328	13,710	15,511	17,957
Accumulated Minority Interest	389	138	205	392	-188
Total Equity	9,726	11,466	13,915	15,903	17,769
Liabilities & Shareholders' Equity	16,886	20,971	26,696	29,436	35,049

Annex 2 Income statement of Tsingtao Brewery Limited from 2009 to 2013

	2009	2010	2011	2012	2013
Sales/Revenue	**18,971**	**22,834**	**25,952**	**29,552**	**33,466**
Cost of Goods Sold (COGS) incl. D&A	**11,671**	**13,016**	**16,378**	**19,246**	**21,568**
COGS excluding D&A	11,049	12,374	15,538	18,209	20,451
Depreciation & Amortization Expense	622	642	840	1,037	1,117
Depreciation	572	586	687	842	898
Amortization of Intangibles	46	52	148	189	211
Amortization of Deferred Charges	4	4	5	6	8
Gross Income	**7,300**	**9,818**	**9,574**	**10,305**	**11,898**
SG&A Expense	**5,087**	**5,511**	**6,394**	**7,175**	**8,945**
Research & Development	-	13	-	15	25
SG&A	5,087	5,498	6,394	7,159	8,920
Other Operating Expense	307	2,039	640	732	580
Unusual Expense	-173	47	10	8	13
Non Operating Income/Expense	-45	452	873	847	1,123
Non-Operating Interest Income	47	103	177	368	448
Interest Expense	109	95	117	128	105
Gross Interest Expense	109	95	117	137	134
Interest Capitalized	0	0	0	9	29
Total expense	**5,329**	**7,392**	**6,623**	**7,269**	**8,546**
Pretax Income	**1,971**	**2,426**	**2,951**	**3,036**	**3,352**
Income Tax	**500**	**618**	**792**	**786**	**873**
Income Tax - Current Domestic	667	727	887	938	1,164
Income Tax - Current Foreign	0	0	0	0	13
Income Tax - Deferred Domestic	-168	-109	-96	-152	-304
Income Tax - Deferred Foreign	0	0	0	0	0
Income Tax Credits	0	0	0	0	0
Equity in Affiliates	2	11	5	18	12
Other After Tax Income (Expense)	0	0	0	0	0
Consolidated Net Income	1,474	1,819	2,165	2,268	2,492
Minority Interest Expense	52	73	72	106	2
Interest paid	**549**	**681**	**858**	**874**	**862**
Net Income	1,422	1,745	2,093	2,162	2,490

Extraordinaries & Discontinued Operations	0	0	0	0	0
Extra Items & Gain/Loss Sale Of Assets	0	0	0	0	0
Cumulative Effect - Accounting Chg	0	0	0	0	0
Discontinued Operations	0	0	0	0	0
Net Income After Extraordinaries	1,422	1,745	2,093	2,162	2,490
Preferred Dividends	0	0	0	0	0
Net Income Available to Common	1,422	1,745	2,093	2,162	2,490
EPS (Basic)	1.08	1.29	1.55	1.6	1.84
Basic Shares Outstanding	1,315	1,351	1,351	1,351	1,351
EPS (Diluted)	1.08	1.29	1.55	1.6	1.84
Diluted Shares Outstanding	1,315	1,351	1,351	1,351	1,351
EBITDA	2,528	2,910	3,381	3,436	3,490

Annex 3 Cash flow of Tsingtao Brewery Limited from 2009 to 2013

	2009	2010	2011	2012	2013
Net Income before Extraordinaries	1,474	1,819	2,165	2,268	2,492
Depreciation, Depletion & Amortization	622	642	840	1,037	1,117
Deferred Taxes & Investment Tax Credit	-170	-109	-96	-152	-304
Other Funds	231	210	256	87	-428
Funds from Operations	2,158	2,562	3,165	3,240	2,877
Extraordinaries	0	0	0	0	0
Changes in Working Capital	1,668	1,208	-846	856	1,479
Net Operating Cash Flow	**3,826**	**3,770**	**2,320**	**4,096**	**4,355**
Capital Expenditures	-817	-1,267	-2,940	-2,924	-2,569
Net Assets from Acquisitions	**0**	**0**	**-2,130**	**0**	**-115**
Sale of Fixed Assets & Businesses	10	21	44	16	15
Purchase/Sale of Investments	-234	-200	0	-5	50
Other Uses	-33	-191	-639	-376	-424
Other Sources	30	758	860	556	1,092
Net Investing Cash Flow	**-1,045**	**-878**	**-4,805**	**-2,733**	**-1,951**
Cash Dividends Paid - Total	0	-266	-	-	0
Change in Capital Stock	0	0	0	0	0
Issuance/Reduction of Debt, Net	-352	-3	432	-27	-214
Other Funds	887	-30	-366	-455	-767
Net Financing Cash Flow	**535**	**-299**	**66**	**-482**	**-981**
Exchange Rate Effect	4	-4	-4	3	-2
Miscellaneous Funds	0	0	0	0	0
Net Change in Cash	3,321	2,589	-2,424	884	1,420
Free Cash Flow	3,009	2,503	-621	1,172	1,786

Annex 4 Profitability ratio of Tsingtao's main competitor

4.1 Profitability ratio of China Resources Snow Brewery Company Limited

Indicators	2009	2010	2011	2012	2013
Operating profit margin	24.41%	22.34%	19.81%	21.74%	13.44%
Net profit margin	15.72%	11.89%	11.02%	12.98%	5.11%
Return on assets	5.44%	5.58%	4.77%	5.18%	3.23%
Return on equity	7.47%	6.42%	5.97%	7.33%	3.20%

4.2 Profitability ratio of Beijing Yanjing Brewery Company Limited

Indicators	2009	2010	2011	2012	2013
operating profit margin	31.55%	34.74%	32.19%	23.12%	25.18%
net profit margin	21.32%	24.58%	22.13%	16.64%	16.88%
return on assets	7.81%	7.38%	7.07%	4.70%	5.37%
return on equity	7.26%	8.10%	8.06%	5.59%	5.26%

Annex 5 Liquidity ratio of Tsingtao's main competitor

5.1 Liquidity ratio of China Resources Snow Brewery Company Limited

Indicators	2009	2010	2011	2012	2013
Current ratio	0.88	0.98	0.96	0.89	0.86
Quick ratio	0.49	0.57	0.57	0.52	0.52
Cash ratio	0.63	0.64	0.56	0.54	0.56

5.2 Liquidity ratio of Beijing Yanjing Brewery Company Limited

Indicators	2009	2010	2011	2012	2013
Current ratio	1.22	1.23	1.11	0.92	1.07
Quick ratio	0.47	0.52	0.39	0.30	0.39
Cash ratio	0.53	0.58	0.43	0.35	0.46